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IBM Ordered to Maintain Extended Core Users

By E. Drake Lundell Jr.
Of the CW Staff

SAN FRANCISCO – IBM has been restrained by a federal district court here from discontinuing maintenance on computer systems with extended core memories manufactured by Advanced Memory Systems Inc.

Federal Judge Lloyd H. Burke issued a temporary restraining order prohibiting IBM's withdrawal of maintenance services from users with Advanced Memory Systems core extensions on their systems.

The move comes shortly after IBM had sent letters to users of Data Recall core extensions withdrawing the IBM maintenance support [CW, Feb. 16], but the IBM move in respect to the Data Recall extensions is not covered in the present action.

The order will be in effect until March 2, when a full hearing will be held to decide whether to impose a permanent injunction against IBM in the matter.

Continue Maintenance

The Advanced Memory suit, which was joined by Itel Memory Equipment Corp. and Itel Computer Leasing Corp., asks that IBM be required to continue to maintain those systems that have extended their core memory beyond the limits imposed by IBM through the use of Advanced Memory devices.

The Itel Memory Equipment group markets the Advanced Memory units, and the Itel Computer Leasing organization is the owner of several systems using the Advanced Memory devices and presently under IBM maintenance.

Advanced Memory and the Itel units claim that the withdrawal of maintenance service would be a violation of the antitrust laws.

They also charge discontinuance of maintenance services would force many present customers to find new sources of maintenance or to discontinue the use of the core extensions.

In addition, they claim withholding maintenance on the part of IBM would discourage a "possibly large number of potential customers" from purchasing the memory extensions.

While the judge has barred IBM from discontinuing maintenance, he also ordered the Itel units and Advanced Memory not to install memories that exceed the IBM limits without warning potential customers that IBM claims it might be impractical to continue

(Continued on Page 4)

How Extended Core Is Added

By a CW Staff Writer

NEWTON, Mass. – The whole IBM case against maintaining 360/30s with extended core hinges on the contention that the extensions "render maintenance and repair impractical," but no one has yet defined what alterations to a system make its maintenance impractical.

To date, industry sources said last week, IBM has not defined the problem areas found with maintaining systems with core extensions, although the independents have asked for such guidance.

The IBM answer has been that upgrading a 360/30 from its IBM-established upper limit of 64K to either 96K or 128K requires too extensive alterations to the systems for it to continue maintenance, the sources said.

Interestingly, however, several sources noted that IBM thus far has only objected to installations that have gone to 128K of core and not to the ones with only 96K – a figure that IBM will itself provide to IBM users on a special contract basis.

What Is Involved?

No one last week would define exactly what physical changes have to be made to a 64K system to make it a 128K system, although rough estimates can be given. All of the estimates are approximate, however, since the number of alterations depends on the specific 2030 CPU, the number of selector channels, etc.

(Continued on Page 4)

Court Bars Matching of Welfare, Unemployment Insurance Data

By Edward J. Bride
Of the CW Staff

SACRAMENTO, Calif. – Welfare recipients here have obtained a preliminary injunction to prevent the state from using computers to break the law, according to attorneys of the San Francisco Neighborhood Legal Assistance (NLA).

The injunction was issued in Sacramento County Superior Court, after the San Francisco-based group filed a complaint against Robert B. Carlson, head of the California Welfare Department.

The complaint charges the department with illegally extracting information from computer files of unemployment insurance checks.

Under a Welfare Department procedure initiated last December, the Social Security number of welfare recipients would be used to find whether recipients were being overpaid. Federal welfare rules prohibit the disclosure of this information without the individual's consent, said Ralph Abascal of NLA.

In California, the Department of Employment Security maintains quarterly reports on earnings, Abascal noted, since these earnings determine unemployment benefits.

California law provides for the investigation of these records, or internal revenue records, if there is "probable cause" to suspect that inaccuracies or fraud exist. A "blanket search" of an entire list is like a door-to-door search, and is prohibited by law, Abascal said.

While federal law permits states to distribute tax records for the administration of tax laws, Abascal said "we're not dealing here with the administration of tax law," but with public assistance.

Judge B. Abbot Goldberg issued the preliminary injunction Feb. 10, Abascal related, pending final determination of the welfare group's claims. "We've stopped the procedure thus far," the lawyer noted.

Last year the U.S. Department of Health, Education and Welfare (HEW) disapproved of cross-checking unemployment reports with welfare reports, since this constituted a violation of the "collateral consent" law, Abascal explained.

The 1971 HEW recommendation was reached after a study into a similar situation in Nevada, he added.

The cross-checks were made by eye, although earnings information was retrieved by using Social Security numbers to access the computer files, he noted. The printouts would then be given to the Welfare Department, for the blanket comparisons, Abascal added.

User Sues User

DP Staff Unfairly Lured Away?

By a CW Staff Writer

INDIO, Calif. – How can the small computer center retain employees, when a large nonprofit medical research facility offers programmers higher salaries?

How can a computer user fight the mobility tendencies of his DP employees during the price freeze?

Master Computer Co. (MCC) is trying to answer these and other questions in a lawsuit filed against Eisenhower Medical Center.

Master complained that officials of the new facility in nearby Palm Desert "induced" MCC employees to breach their employment contracts, by allegedly using trade secrets and other aspects of unfair competition.

Eisenhower Executive Director James M. Taylor refused to comment, as did his outside attorney, who also declined to say whether he planned to meet next week's deadline for filing a reply.

The defendant had already obtained a 30-day extension, according to John Harris, president of MCC and its parent firm, Tax Consultants, Inc.

According to papers filed in Riverside County Superior Court here, Eisenhower was recruiting MCC's employees in order to assure the medical center "of a continual source of trained employees so as to thereby damage plaintiff's business and save themselves the expense and trouble" of training new personnel.

The suit seeks actual damages, as yet unspecified, plus $500,000 punitive damages. MCC also wants a restraining order preventing Eisenhower "from soliciting plaintiff's employees" for the purpose of "inducing such employees to breach their employment agreements."

Harris said his small business has to run more efficiently than a large, non-profit facility whose

(Continued on Page 3)

Fortran Added to S/7

WHITE PLAINS, N.Y. – Fortran will be available as a programming language for the IBM System 7, but only if the user has access to a 360 or 370 for program development.

Until now, the only language for the System 7 has been an Assembler, which operates directly on the small, sensor-based CPU.

The System 7 Fortran IV Host Compiler and Library for the 360/370 wll be released by the end of this year, IBM said. It will run on the mainframe in conjunction with the Host Program Preparation Facilities II, another set of programs, scheduled for delivery from IBM in the third quarter of the year.

The Host Compiler translates Fortran statements into an operational program for a System 7 having at least 6K words of memory. Unlike some cross-assemblers for other host-target combinations, this package does not support testing of the System 7 programs on the 360.

To utilize the compiler, the 360/370 host machine must have 131 bytes of memory under OS or 65K bytes under DOS.

The Host Compiler is an IBM program product and will be distributed under license agreement for $125/mo. The companion Host Program Preparation Facilities II package will be available without cost, IBM noted.

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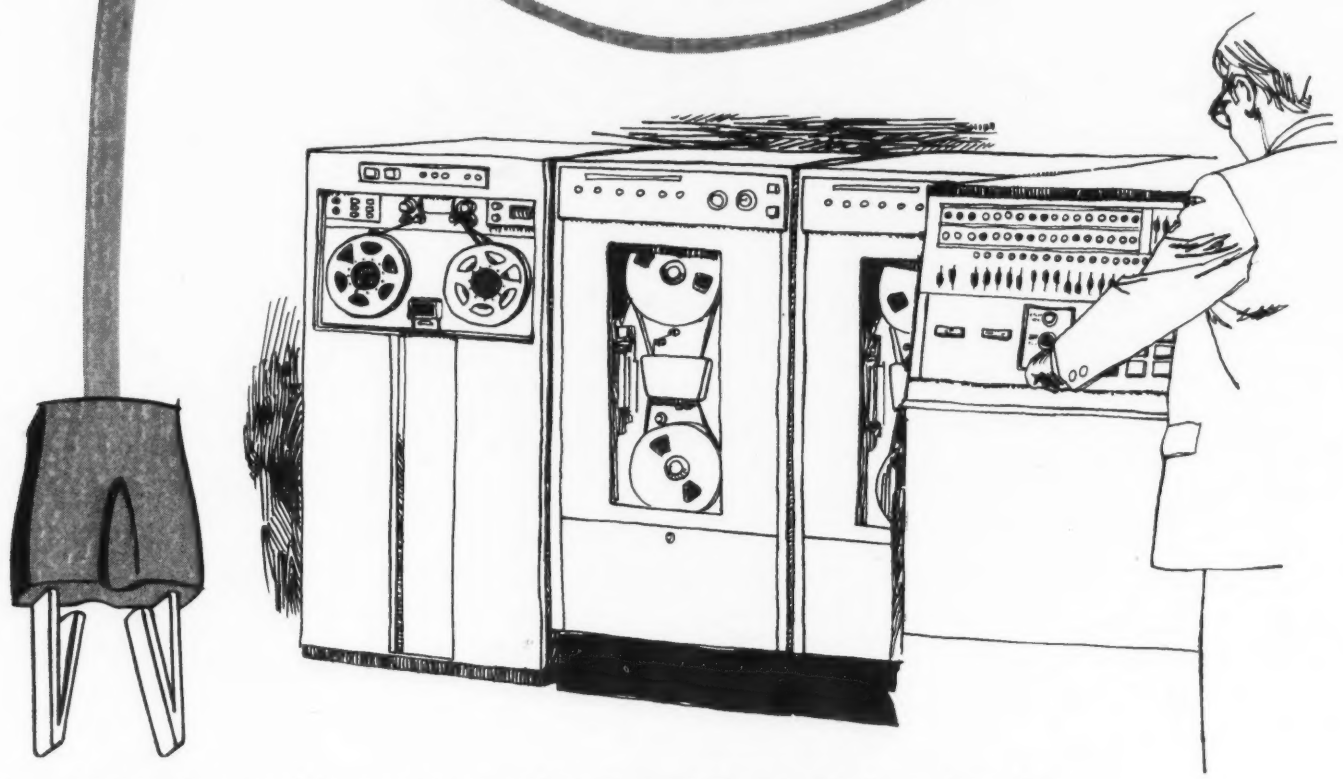

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Antitrust Ruling This Year?

User Rebates Possible If Justice Wins IBM Suit

By E. Drake Lundell Jr.
Of the CW Staff

WASHINGTON, D.C. – IBM users could conceivably press for refunds on their computer bills of the last seven years if the government is successful in its antitrust suit against the firm, Justice Department lawyers confirmed last week.

"If we get a decree from the court, that judgment could be used in class action suits against IBM as prima facie evidence that IBM had engaged in monopolistic practices," a Justice lawyer said.

In the class action suits that could be brought against IBM, charging overpricing, the users would be able to get treble damages from the computer maker, he added.

At the same time, however, most sources both within and out of government believe the IBM suit will be settled by a consent decree that does not admit guilt on the part of IBM, and which would not permit users to obtain such rebates.

While the Justice officials would not estimate the size of the refunds that would be possible, Joan Van Horn, president of VIP Systems which is suing IBM, said recently that users could "expect to share in a refund of IBM's excess monopoly pricing of at least 10% of their bills for the last seven years."

This would amount, she said, "to over $4 billion, of which a major portion would go to the Federal Government" as the largest single user of IBM equipment in the world.

The present government suit does not specifically ask for damages against IBM, but the Justice lawyers said successful prosecution of the present suit would open the door to that type of action both on the part of the government and on the part of individuals, either alone or as part of a class action.

Happened Before

While the idea of rebates on past payments to a firm found to be monopolizing an industry seems "far-fetched" to some, the Justice Department lawyers emphasized it has happened before, particularly in a suit charging GE with monopolizing the electrical transformer field.

The users could receive the rebates if the government's suit is resolved in any one of three ways, the lawyers said.

First, if IBM is found guilty by the court of monopolistic practices. Secondly, if IBM signs a consent decree after the court has begun hearing the case.

In this instance, the consent decree would be taken as an admission of guilt, they said, even though consent decrees arranged before the trial begins usually are not.

The third possibility would be a consent decree arranged before trial that contains an "asphalt" clause, or an admission of guilt on the part of the party signing the decree. The clause is so named because it was first used in a government case against asphalt manufacturers.

Status of the Case

The Justice Department lawyers denied reports the Nixon Administration has downgraded the status of the case against IBM and said they were "pushing it as aggressively as possible."

The suit is still in the discovery stage, they said, and no depositions have been taken yet. However, they noted, IBM has asked the government for a great deal of information on computer use in government, and this was taking much time and manpower to prepare.

The suit should enter the deposition state "hopefully" by the end of this year, they added. The deposition stage is the step before the trial stage, and the lawyers said they wanted a trial to start "as soon as possible."

User Sues User; Says Its DP Employees Unfairly Lured Away

(Continued from Page 1)

funds come largely from tax-exempt contributions. The price freeze compounds the dilemma, since Harris cannot counter Eisenhower's alleged offers of salaries "25% to 50% higher for programmers."

Programmer, DP Manager . . .

The activities, according to the suit, began last fall, when John Kreisinger, a programmer and sales representative, left MCC to join Eisenhower.

Kreisinger left of his own accord, and apparently was not "recruited," Harris said. However, shortly thereafter, the suit continues, Eisenhower officials induced Julius Black, the DP center manager, to leave MCC and join the medical facility.

Black knew the names and salaries of MCC's "best and most productive employees," the suit claims, adding this information "constituted a trade secret . . . not available to the general public" or to MCC's other competitors.

MCC performs computer services on an IBM 360/20 for about 20 commercial clients, as well as for its parent firm, Harris related.

The loss of Black and the solicitations of other MCC employees caused a "substantial drop" in business and "lost profits," MCC said. Additionally, the recruiting efforts constituted "harassment of plaintiff's employees" causing "serious and substantial morale and personnel problems . . . materially reducing their effectiveness and robbing them of their efficiency at their duties," the suit claims.

Harris does not mind competing on neutral grounds, he indicated, adding, "I'd even compete with IBM" to keep employees. But Eisenhower enjoys a competitive advantage because of its nonprofit tax structure, and the wage freeze is preventing MCC from fighting back with offers of higher salaries, he stated.

The medical center was dedicated last November by President Nixon, and the alleged activities took place in an effort to establish its "computer and data processing functions," and "capitalize" on MCC's "experienced personnel in staffing and running" its business, the suit states.

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AMPEX

IBM Must Continue Core Maintenance

(Continued from Page 1)

to provide maintenance to the installation.

IBM would not comment on the suit.

IBM under the 1956 Consent Decree can refuse to maintain systems that are "substantially altered" from their original status by the addition of equipment from other suppliers.

Most of the independent makers of core extensions admit they have to alter the IBM mainframe to install their equipment, but they claim that the alterations are minor and would therefore not fall under the regulations.

The IBM claim that it is impractical to provide maintenance to expanded systems is a "sham," according to the suit, designed to put others out of business so that IBM could market more 370 systems.

The suit charges IBM with monopolizing the maintenance field, claiming that 95% of the people providing maintenance to IBM equipment are employed by IBM.

Justice Puts Off 360/40 Upgrade

WASHINGTON, D.C. – The Justice Department put off upgrading its 360/40 from 256K to 384K with a core extension unit from Data Recall after receiving a warning from IBM that maintenance might be cancelled.

IBM told the agency – in a letter almost a month before the planned installation – it would no longer maintain the 40 if the Data Recall extension was added "in a similar manner" to other Data Recall 40 extensions.

IBM also warned the General Services Administration that it would no longer provide maintenance to systems altered by the addition of Data Recall memory, reliable sources reported.

Previously IBM stated it was notifying users it would withdraw maintenance only after inspecting the installation.

How to Add Extended Core Memory

(Continued from Page 1)

The best estimate of the changes indicates that typically 194 new wires would be added, 107 new read-only storage cards, and sometimes up to four new SLT cards when the user upgrades with the Data Recall expansion memory.

Of the 194 new wires, 180 do not connect directly to IBM logic. The 14 wires that do are primarily to remove the 64K wrapping on the 2030. Wrapping is when an address goes beyond an upper limit and then back to zero.

Of the read-only storage 84 instructions have been added to the present IBM read-only storage in blank or unused positions.

Each ROS can have 12 instructions, but it is currently not known how many instructions are actually added in the upgrading operation.

Of the SLT cards, some have been added to blank positions; ie., ones that have been left without any card inserted in the 2030. The others use spare areas and pins on cards that are only partially used in the "normal" 2030 CPU.

Because IBM does not supply spare SLT cards for such use – it only supplies them for maintenance purposes – the independents have had to produce IBM-type logic to use the spare area.

Diagnostics Problems

As the extensions were originally installed, IBM's 64K maintenance diagnostics could not be run on the altered machine correctly, according to industry sources.

The problem is that addresses of over 64K do not wrap around but go to the next extended core.

In oversized machines, addresses above 64K naturally go to the new physical address and don't wrap around. Therefore the constant used in the IBM diagnostics needs to be changed before they will work.

The firms such as Data Recall, however, have been unable – or so far have not persuaded IBM – to change this constant.

They have therefore adopted other methods to make the system wrap around at the 64K level when necessary for diagnostic purposes. This is now done by installing a new constant and providing a switch that brings it into play for the particular diagnostic.

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News Wrapup

Fire Destroys Tufts Small Computer

MEDFORD, Mass. – Police are investigating the possibility of arson in a $250,000 fire which destroyed a "small computer" valued at $20,000 along with other equipment in North Hall of Tufts University here.

The computer is believed to be a PDP-5, used with an analog-digital converter, two home-made interfaces and teletypewriter. The unit was used by the psychology department for research and development work.

Italians Approve Five-Year Railroad Plan

ROME – The Italian State Railways has approved a five-year plan for computer development, scheduled for completion in 1977.

A sales subsystem will handle ticket sales, rate quotations, seat reservations, invoicing, tariff studies and the support accounting functions.

Passenger service computers will be enlarged. The seat-booking operation now has 81 interrogation points and serves 19 carriage sidings. On the freight side the sales subsystem will be equipped with a multiprocess computer to exercise coach and wagon control and will be used for real-time control of busy sections of lines.

The administration subsystem will have two computers and will be used for finance, salaries and wages, stores, staff records and control.

The fourth management subsystem is connected to all the others and provides top management with data and statistics as well as handling scientific calculations. Data from the DP centers will be collected and processed at the 15 divisional centers; a telecommunications system between these divisional headquarters and the centers is already functioning.

'Joint Centers' Advised for Japanese Firms

TOKYO – The Tokyo Chamber of Commerce and Industry has advised the nation's smaller business concerns to invest in "joint computer centers" as soon as possible.

In a recent report on the present state of computer utilization by small Japanese businesses, the group said more companies than not have failed to use their systems efficiently. Since personnel and funds are limited, it would be better to share computer facilities, the report observed.

Input Error Causes Double Tax Trouble

RENO, Nev. – Local assessors rarely win popularity contests, but Donald Peckham, Washoe County assessor, found himself beseiged with phone calls recently. The callers were relieved to learn their property taxes had not doubled, as indicated on bills they had received from their mortgage company, Bowest Mortgages Corp.

The apparent rise in rates was caused by an input error, according to Bowest's service bureau.

The 745 Nevada accounts, all added since the middle of the year, contained the annual amount of taxes due, but included a code indicating the state-required semiannual payment. After processing, the amount due was exactly double what it should have been.

But Will It Be Too Late to Return Him?

DETROIT – If you really want to know what your six-year-old will look like when he's 12, Dr. Geoffrey F. Walker of the University of Michigan may provide a peek.

He believes that dentists eventually may predict the shape of the jaw and the entire lower face with X-rays and a computer system. He contends that with two or more X-rays of a six-year old's skull, he can predict the shape the lower face will be at 12-years-old.

By aiming a light pen at the CRT and pushing a button, a dentist can see how the face would be changed by braces or other remedial acts.

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Court Review Possible

Software Patents: a Spur to Industry Competition?

By Edward J. Bride
Of the CW Staff

WASHINGTON, D.C. – All computer users stand to benefit from software patents, since protection of software products will encourage competition in the industry and help promote progress, according to a leading software industry figure.

Martin A. Goetz, holder of one of the earliest software patents and vice-president of Applied Data Research, Inc. (ADR), said the patent system has proven "particularly beneficial to small, growing industries" in the past.

"Then certainly patenting will benefit the software industry, which, in turn, will benefit all users of computers," he commented.

Lack of Competition

The inefficient use of computers might even be blamed in part on a "definite lack of competition within the software industry," Goetz continued.

"To further diminish the opportunity to freely compete on the part of small, independent software manufacturers could be disastrous to everyone concerned," he said.

Patents, by granting a limited-duration monoply, provide sufficient protection to encourage further investment, he added, enabling continued advancement in technology and the state of the art.

The current controversy surrounding software patents stems from the possible Supreme Court review of the Benson-Tabbot program which converts BCD data to true binary.

The real issue, however, is whether a "process" should be denied patenting simply because it is "embodied in software rather than hardware," Goetz said.

Recent commentary on the issue has focused on patenting programs, and on whether programs are mental processes, Goetz said, while the issue which needs final Supreme Court resolution is protection for the "innate 'process' developed."

ADR, of Princeton, N.J., holds two patents, one for a sorting process for which "no program *per se* was ever written," Goetz said. "We were simply attempting to protect the unique, useful and unobvious sorting 'technique,' " he explained.

After the sorting process was patented, the U.S. Patent Office announced a policy which automatically rejected applications for software patents. That policy was revoked after the Court of Customs and Patent Appeals (CCPA) reversed Patent Office rejections of some applications.

Quick Resolution

Computer industry sources, both hardware and software, are calling for quick resolution of the uncertainty, and the Supreme Court is expected to announce before spring whether it will hear the Benson-Tabbot case. The patent was appealed by the U.S. Solicitor General, on behalf of the Patent Office.

Briefs have been filed by business associations, urging the court to finally decide whether programs, or the processes they control, are patentable.

One such brief was filed by the hardware manufacturers, represented by the Business Equipment Manufacturers Association (Bema) here.

'Final Resolution'

Most of the briefs do not take sides, but discuss whether the court should take up the issue. Bema, for example, said "it is imperative for the orderly development of future technology . . . that there be a final resolution now" of the issue.

Programmers "will be compelled to operate in an atmosphere of distrust and secrecy," going so far as "to engage in protracted litigation in infringement suits" until the question is resolved, Bema noted.

Deny Appeal, Bell Says

Bell Laboratories also filed a brief, as defender of the Benson-Tabbot patent. The Bell position, however, sought to deny the petition for the Supreme Court to hear the appeal.

An "adversary context," such as in an infringement action, is needed in order to develop fully all the background and current circumstances, according to Bell Labs.

The Solicitor General's petition was based on a Patent Office appeal and consisted mostly of "legal assertions and counter-assertions," Bell Labs claimed, without sufficient attention to the technology involved.

It was Bell Lab's contention, therefore, that their patent is not "an appropriate case" for the resolution of the issue.

Bell attorney William Keefauver was critical of a contention that software patents might be considered "anti-competitive," as was suggested by a political science professor who predicted that the Supreme Court would overturn software patents [CW, Dec. 8].

Most of the Supreme Court cases cited by Dr. Harold Spaeth involved patent litigation, which is not the case with the Benson-Tabbot appeal, Keefauver noted.

Spaeth, a Michigan State University professor who also writes a syndicated column called the "Supreme Court Computer," said the court would probably take the case, and will decide pro-competition, or anti-software patents, as he sees it.

Competition 'Discouraged'

WEBSTER, N.Y. – A software patent for a data base management system called Inquire has been obtained by Infodata Systems Inc. here.

It is the third known patent for a proprietary system and, according to the company, the first in the field of computerized data base management.

Obtained last year, the patent was made known to company stockholders only recently, in a special letter from President Ronald A. Furman.

The patent will provide "a defense against infringing claims," Furman said, adding "it will discourage incipient competition."

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'Giant' Aids School Aid

DES MOINES, Iowa – Iowa may have made some of the most significant inroads ever in equitably handling school tax rates and state aids to schools.

Comptroller Marvin R. Selden Jr. said Iowa used a 370/155 during the last session of the state legislature to help reach a tax solution that resulted in the most comprehensive school aid bill in the state's history.

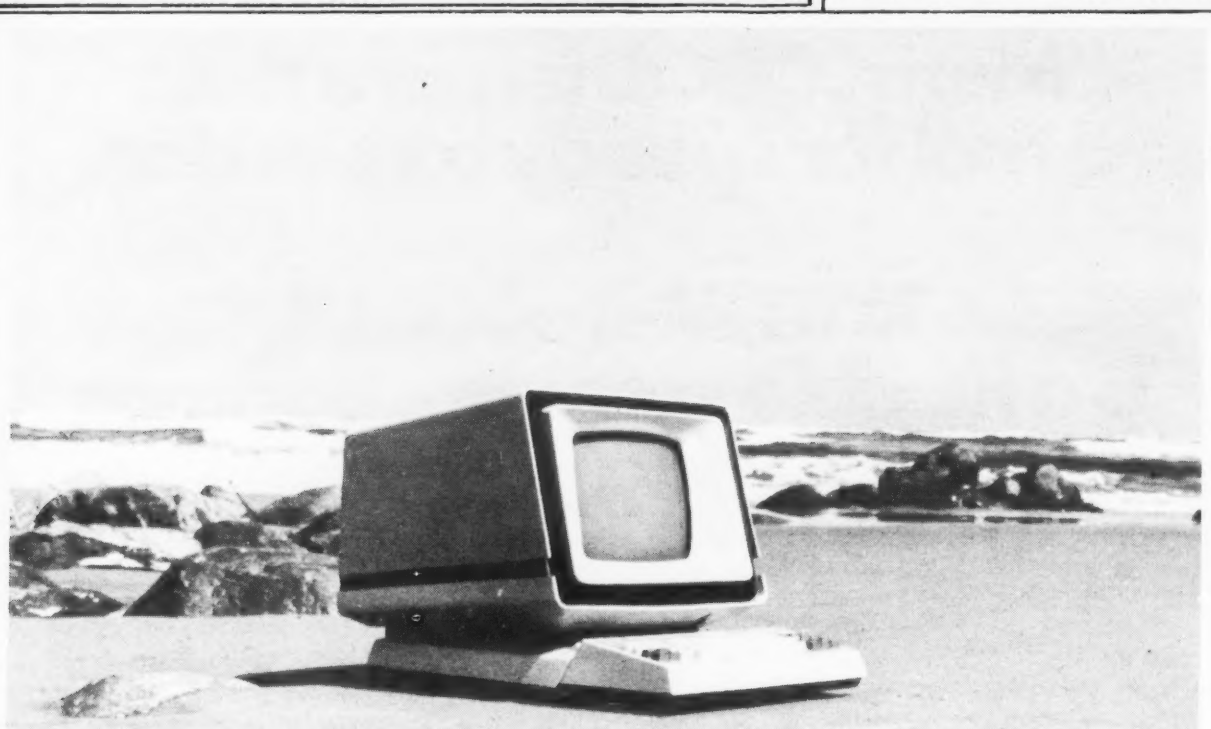
The Legislature's Ways and Means Committee used the computer as if it were a "giant mathematician" continuously figuring revisions and alternatives to the bill while debate was on.

Fifty-two detailed analyses of various tax aid proposals were produced during the session. The only way such detailed assistance could have been provided to the legislature was through data processing, Selden said.

Taxes were considered so vital that an expenditure of millions of dollars for the right solution would not have been considered out of line. However, the production costs for an eight-month period totaled only $22,390.

With the computer, the legislature was able to project costs in each of the state's 453 school districts over five school years. Thus it was known almost immediately what a change in the school tax mill rate would mean for any district in any of the five years.

The computer also printed the final school aid bill as it did all legislation handled by the legislature. Iowa uses remote terminals linked to the computer to assist the Legislature Service Bureau. Any item of pending legislation can be called up and printed within minutes with all up-to-the-minute changes.



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New Zealand Farming Beefed Up

By William Scholes
Special to Computerworld

WAIKATO, N.Z. – The computer has arrived on the beef rearing scene in New Zealand.

Derek Gower has started a beef computer service which should allow the farmer to get full advantage from his scales.

Gower can tell whether his buying policy is sound and his cattle are growing at the best rate for the feed available at any stage of the season. More important, he now has the information to let him decide what time to sell and what market to sell in.

The plan worked so well with his own beef cattle that Gower made it available to other beef farmers.

For an initial fee, the farmer receives detailed instructions and forms. He sends the completed forms to the processing center, a private pathology laboratory run by a group of doctors in Hamilton, and after processing, the computer printouts are returned to the farmer.

If the farmer fills in details of purchase date, purchase price, sale date and sale price for each animal, the computer will calculate the total profit and profit per day.

A prediction service developed by Gower and the New Zealand Department of Agriculture enables the farmer to conduct his beef enterprise with even greater precision. The computer requires a target date and a target weight for every animal at the date. It works out the weight gain required to have every animal on target.

When the predictions show a certain number of animals will clear the target weight by the target date, the farmer can reallocate the land for something else.

A recent development in the computer service is a program aimed at breeders. Using 200-day figures the computer works out the average growth rate for the herd and indicates how each animal deviates from this average rate.

What's Up Down Under

DP Overrules Discretion

SYDNEY, Australia – A computer has ended the age of discretion in the police force of New South Wales. No longer will senior police decide themselves whether an incident is a crime and should be reported. Discretion was used in cases where there were no victims.

The police are now obliged to report to headquarters every incident investigated. Their reports are fed into the Univac 9400 computer and according to the man in charge of the computer, Detective Sergeant Phil Arantz, the number of incidents reported has doubled. Arantz said most police favor the new system.

Centralization a Must

CANBERRA, Australia – Australian educator Sir Ian Wark, the first chairman of the Commonwealth (Federal) Advisory Committee on Advanced Education, believes there is need for a statutory body to rationalize the installation and use of computers in Australia.

The proposed body would keep the Federal Government informed about new developments, weigh the claims for computers on a regional and national basis, and ultimately provide service at cost for scientific and educational institutions and purposes.

Because of the increasing demand other institutions would have for computers, he said, there was a need for centralization of facilities.

Racetracks 'Gas Up'

SYDNEY, Australia – The Victorian Totalisator Agency Board (TAB) in Melbourne has installed natural gas-fired turbines to run its computer.

To cover all the races in Melbourne, and interstate, the computer must make a calculation every one thousandth of a second. To do this successfully and accurately, the voltage of the power supply must not vary even to a small degree.

There would also be a problem if power were to be cut off for any reason.

Red Cross to Cut Waste

SYDNEY, Australia – The national chairman of the Australian Red Cross Society, Sir Geoffrey Newman Morris, is urging a Red Cross computer programmed with worldwide facts on customs and eating habits as a means of ending the current waste of disaster relief supplies.

Large quantities of relief supplies, he said, were wasted because of ignorance.

With a computer, information would be readily obtainable throughout the world in times of disaster, and the societies would know exactly what to send, added Sir Geoffrey.

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Special Report

Source Data Automation, Part IV

The Honeywell Tracom terminal includes a keyboard labeled with various "fast food" functions. For this sale the operator presses the "cone" key and the proper amount is automatically registered.

Voiceprint Input Device Could Automate Entire Transaction

"Some form of a computer voice input device should be commercially available by the end of 1980."

While it is possible to have an all-electronic sales transaction, several important requirements continue to make the "hard copy" mandatory. Whether a sale is made in a store or a gas station, a paper copy of the transaction must be available.

The most obvious need is the customer's request for a receipt. While many buyers pay little attention to their sales slip or its equivalent, the paper becomes crucial whenever merchandise has to be returned for one reason or another.

Versatile

The Jewel Companies designed this system especially for a varied store environment. It was built by Nuclear Data Corp. to the specifications set by the user.

Buyer's Signature

And in charge sales the printed copy is important because it provides a vehicle for capturing the buyer's signature. The sale is not valid unless the customer signs.

But perhaps the overriding issue is a legal requirement for a written "audit trail" wherever sales transactions occur. These audit trails include many types of printed transaction data. In a cash register, the printed tape that is accumulated in the machine serves as a legal record for accounting purposes. Similarly many point-of-sale systems print out a running record of transaction even though they may be on-line with a CPU recording all pertinent data.

Impossible Dream?

Is the completely automated transaction an impossible dream? Not according to the experts. Some of the technology that could do away with paper sales slips, receipts and records is within reach, according to Roy Salzman of Arthur D. Little.

"In the future it will be possible to enter a voiceprint into a CPU as legal identification," Salzman says. Such voiceprints will analyze the characteristics of a person's voice in much the same way fingerprints are used today.

"Some form of a computer voice input device should be commercially available by the end of 1980. This device will recognize selected (less than 50) spoken words and convert this voice data into machine language," according to Lawrence Feidelman, a consultant.

If these voiceprint input devices are successfully developed, there is no guarantee that such input could be used instead of the written signature. But the possibility exists and the technology appears to be just around the corner.

Credit Card Not Bothered By Differing Applications

"People should not be thinking about the equipment, they should be thinking about the total system . . . the key to everything is understanding the application." – a data entry consultant.

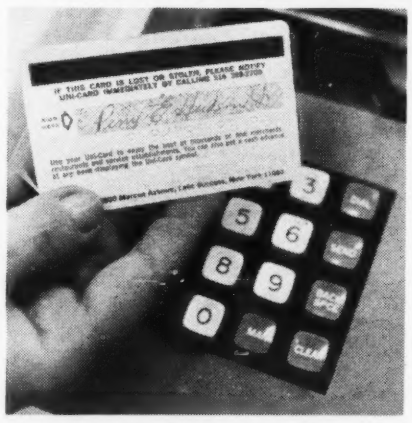
While there is general agreement that the future looks bright for continued implementation of new source data automation systems, the industry experts begin to hedge when asked to predict the specific application areas.

The most likely equipment area of new dramatic growth will be optical character reading (OCR), according to one data entry authority. "Low-cost local or remote optical character, bar code or mark sense reading" will be very popular, he says. These scanners will be able to read a variety of input media and translate it into a desired format to complete a transaction. "When that happens only one small portion of the system, the input medium, will have to be custom tailored," he says.

But some see this emphasis on technology as wrong. "People should not be thinking about equipment, they should be thinking about the total systems," according to Lawrence Feidelman, a data entry consultant.

"There are already companies that can tailor their systems to meet many different applications if they want to," Feidelman says. "The key to everything is understanding the application," he believes. "And the manufacturer that just tries to sell his equipment without understanding the user's needs is in for a terrible shock," Feidelman believes.

These terminals offer two approaches to credit authorizations at the source of a transaction. The Addressograph-Multigraph terminal uses the magnetic stripe, while the Data Source Corp. unit scans embossed characters (at right).



But users must also share some of the burden for the relatively slow growth of source data automation systems into new applications. "Everybody thinks his application is just a little bit different than what somebody else has," Feidelman says. And this hesitation at adapting previously developed systems raises the development costs of source data automation systems.

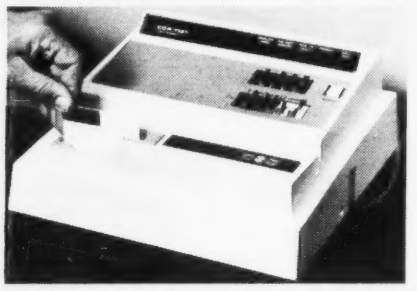
In some areas users still insist on developing their own systems even though successful applications are available, Feidelman says. Inventory control is a good example, he feels, with good software packages and other viable system elements available.

Some of the insistence on self-development may also result from users' unfamiliarity with work being done by others.

Should there be more cross-fertilization among source data automation users and potential users?

"I have proposed a source data automation society" for some time, Feidelman says. But a general organization might not be welcomed by all users, he believes. "Some users only want to hear about what has been done in their own areas of interest," he says, "and they don't want to bother with an organization that would discuss other applications. These users say they have enough of a problem understanding their own field."

Meanwhile the source data systems that are appearing are usually not multi-environment oriented. Unfortunately, the suppliers are not eager to enter different areas. For one thing a supplier must know an industry inside and out before developing a source data system. That is why most tend to concentrate on one application at a time, most observers agree.



But there is one area in which the growth of source data automation will tend to cut across differing applications. That is the credit authorization/sale transaction.

Credit Authorization

The basic element in a credit authorization transaction, the customer identification card, is already standardized for much of its contents. "The physical characteristics of a credit card have been accepted as an international standard. And the specifications for magnetic stripe encoded information on the cards are now a de facto standard," according to a spokesman for the American Banking Association (ABA).

In addition, an ABA bank card standardization task force has come up with specifications for message content, and format for an interchange authorization communication message, the ABA spokesman says. And work is progressing on common formats for the magnetic stripe on the back of many credit cards.

The ABA magnetic stripe standard includes two stripes. The upper track contains about 80 characters and is reserved for use by airlines and air travel credit associations. The lower track is available for bank plans and other credit agencies. This credit track has a capacity of about 40 characters, and 19 of these are reserv-

(Continued on Page 9)

More Economical

Smaller Users Turn to Card Punch to Simplify Input

While the larger sophisticated source data automation systems attract much attention, smaller users can simplify their data input procedures in more modest ways.

On-line entry of source data may offer the fastest input of information, but

Using portable mechanical punches, clerks can generate inventory control tab cards as stocks change in the warehouse.

some users can't sustain the volume to make this type of operation economical. For these users any simplification of the input cycle should be considered.

Card Punch

One of the simplest devices that can prepare data in machine-readable form is the portable card punch. These units place a card into a slot and the operator enters the desired punches by depressing levers or keys.

A typical unit is the Wright Punch from Barry Wright Corp. The punch contains 13 keys corresponding to the rows in an 80-column IBM card plus a space key. A card is punched one column at a time and an indicator tells the "operator" which column is under the punching dies.

The advantages here are obvious. Even the unskilled worker in a "hostile" environment like a factory floor can mechanically prepare a coded card.

More complex input terminals have suf-

"Even the unskilled worker in a 'hostile' environment like a factory floor can mechanically prepare a coded card."

fered in some manufacturing locations. One embossed badge reader had its sensing mechanism destroyed by the dust in an abrasive factory, according to a manager of an input company. "The abrasive dust collected on the plastic badges and it wore out the badge reader," he said.

A manual punch installed in place of the badge reader might have captured less data but the environmental problem would have been neutralized.

Another approach to capturing data at the source involves the use of a more general input device which can be adapted to the user's application. When a separate data preparation operation is eliminated by moving the input to the source, then the user is simplifying his installation.

The Motorola Automotive Products Division in Franklin Park, Ill., originally processed incoming orders manually, and then keypunched them for computer input. The two operations involved were a manual one and one which, although automated, was an unnecessary interim process.

Motorola, after careful evaluation of available input systems, chose the Hypertech Corp. GTU-1 remote batch terminal. Up to that point the user merely replaced keypunches. But the firm went a step further. It moved the Hypertech terminals to the point of order entry. The result was a source data automation system where customer service operators were keyed directly into the GTU-1 onto mag tape cassettes.

Standardization Aids Credit Card Utilization

(Continued from Page 8)

ed for the customer account number. The remaining characters are available for the credit agency to include encoded data setting limits on the credit available to the card holder or other variable data, an ABA source says.

And while the credit card is rapidly being standardized, terminals built to work with the standards are also appearing.

One test of a credit terminal designed to accept the ABA standardized card was held recently at the Masters discount department store on Staten Island, N.Y. Run in conjunction with the Uni-Card bank plan, the Masters test included 21 prototype terminals developed by Addressograph-Multigraph Corp. (AM). Called the Credit Authorization Terminal or AM/Cat, the device has a slot to accept and automatically scan the mag stripe data, a Touch-Tone key pad and a small display.

Operator Notified

When entering the charge card, an indication on the display notifies the operator whether the data was properly read from the magnetic stripe. The keyboard on the terminal includes six function keys in addition to the usual numeric Touch-Tone pad.

The AM/Cat units operated on dial-up lines with a 360/50 located on Long Island. The terminal includes a telephone handset used to initiate calls and also receive messages from an audio response unit connected to the CPU.

"The Masters store could just as well have been 20 terminals located at scattered points around the country," according to an AM spokesman. "While we chose a retail environment, similar terminals could also be installed at other locations," the source says.

But the viability of the mag stripe is being questioned by the petroleum companies. They prefer to identify their card holders with the embossed letters already imprinted on millions of credit cards.

And the scanner/terminals to read the embossed cards are also getting a workout at test sites. The Data Source Corp. has 400 terminals installed at various locations where embossed cards are used for credit sales.

Most of these terminals are now installed in gas stations, according to Sidney Keil of Data Source. "In less than seven seconds," a credit authorization check can be completed with the device, Keil says.

The gas station terminal, like the AM/Cat, uses scanning methods to transmit data to a central CPU. The major difference in the devices is that one reads magnetic stripes while the other reads embossed characters.

The magnetic stripe proponents concede that it will be much easier to read embossed cards initially because so many have already been issued. But they see longer term advantages with the magnetic stripe.

Update Information

"One advantage of the mag stripe is that the encoded information can be updated as a transaction takes place, according to Joe Mayfield, director of the Michigan Credit Union League and president of the Digitronics Users Assocation.

As consumers make charge purchases, the mag stripe could be updated with each transaction to indicate the remaining line of credit available to the customer, Mayfield predicts.

The embossed card-reading school frowns on this approach, claiming control should remain at the CPU, where it is secure. The proponents argue that control at the card, in the form of variable data, invites errors and possible alteration of information.

Regardless of who prevails, (and both methods will probably find their own niches) direct entry from personalized charge cards at point-of-sale locations appears headed for fast growth.

Users have an opportunity to help spur the growth of source data systems and make their operations more efficient. The user who alerts system suppliers to his needs will be helping himself while perhaps also developing new source data application areas. As the cost of labor continues to rise, source data systems seem more and more the way to go for cost effective input.

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Editorial

Are IBM Users Incompetent?

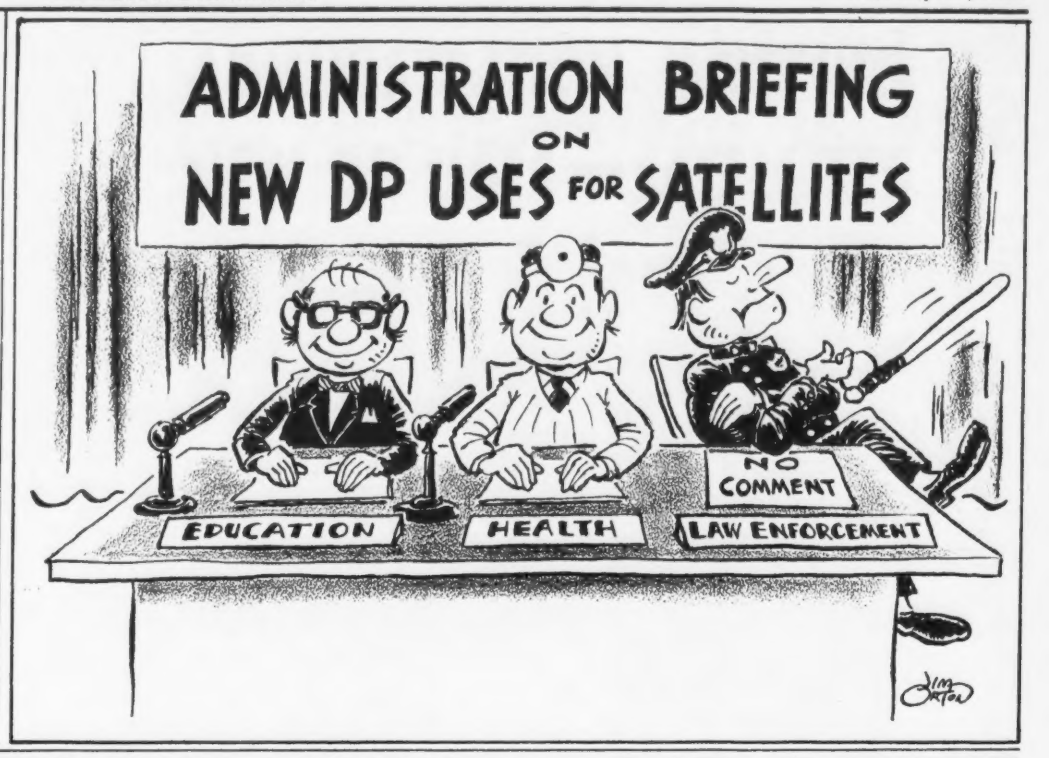
An IBM user asked us recently if we thought a person who has chosen to do business exclusively with IBM was incompetent and/or disloyal to his organization.

The answer is yes – unless he has investigated the alternatives to dealing directly and exclusively with IBM.

This is not an anti-IBM statement. It is a pro-user statement.

We are not trying to make users feel ashamed if they have installations 100% equipped and supported by IBM. But we are trying to make them feel uneasy if they can't back up their choice with facts.

Users who deal exclusively with IBM out of ignorance or laziness are hurting all users now and in the future. Users will have freedom of choice only as long as there is a choice. And that choice will exist only as long as users give other vendors proper consideration before making a decision.



Letters to the Editor

How to Determine Program's Value?

A front page article in the Feb. 9 issue discusses a "proposed software tax" being considered by the state of California and which, it is suggested, if approved, will become a model for the nation.

The article relates that "according to the Board of Equalization, 'when a program is ready for implementation to perform the functions for which it was designed, the result is software, a tangible property within the meaning' of the revenue and taxation code."

I do not suggest that programs have no value. On the contrary, they cost large sums of money to develop, in many instances, and would have a high cost of replacement. However, we should not forget that the computer without a program is as useless as the unskilled employee in a research position or other field requiring a high degree of training and expertise.

In other words, the program is to the machine (computer) what the education and training is to the man. The program is the "training" which the machine must have to perform a useful function. The value of the computer is related to the work which it can do. Without programs it can do no work and, therefore, will have little or no value.

Much more could be developed in the way of analogy to argue against the logic of a software tax, but in essence it would be redundant.

Should the business community be so unfortunate as to be subjected to this type of tax, it would certainly present problems in determining the value of the program.

Should it be developmental cost? Running time? Frequency of use? Some multiplier of the annual savings (if any) achieved through the use of the program? Appraised value as established (how?) by an appraiser from the state Board of Equalization? Should it be related to the estimated useful life? Would it be depreciated? Would maintenance costs be capitalized and increase the tax base? And what about programs used on commercial time-sharing systems?

I certainly feel the California Board of Equalization is delving into an area which is better left alone from a tax consideration standpoint. Let the taxes be derived from the profits of the firm achieved through its efficient use of all of its resources, including people, computers and computer programs.

James A. Schaff
Assistant Vice-President
National Bank of Detroit
Detroit, Mich.

Controls Optimized By Small Users

In reference to The Taylor Report [CW, Feb. 9] Alan Taylor asked the workshops to consider whether or not it is reasonable to put out output that does not crossfoot or is inaccurate.

I can't see any reason for consideration of the question, but would instead ask why or where the controls are to catch this situation?

In past articles on the validity of data processing, most of the users Taylor has referenced have been from large-scale computer user groups. If the large users are having so many problems, why don't they take a look at the basic controls we small users use? These controls can be expanded upon and used very successfully if the basic idea is not lost in all the bells and whistles of a large sophisticated system.

William A. Schindler
Programmer Analyst
Audrain Medical Center
Mexico, Mo.

X and Y Theories Have Differences

In the recent article on preparing for the CDP exam [CW, Jan. 26] Mike Ingram mentioned one should know the difference between the X and Y theories of management. This question appears in the study guide issued by the DPMA for the exam.

I have searched through books on management and have asked MBAs about it and nowhere could I find any reference or person with any knowledge about the X and Y theories of management.

Henry Marcus
Brookline, Mass.

Mike Ingram replies: Basically, theory X is an authoritarian form of management where subordinates have little participation in management. Theory X assumes that workers dislike work and must be driven to perform. Discipline and punishment are the manager's tools, and they are used on workers who shirk responsibility and seek direction for their tasks.

Theory Y is a form of participative management where it is assumed that the worker seeks opportunity for self-improvement and works well without disciplinary threats. Goals and self-direction replace directives and close supervision.

The two theories reflect the two poles of management leadership – authoritarian and democratic.

Can DP Afford Loss Of Professionals?

Regarding Joyce Nayer's [CW, Jan. 26] and A.E. Davis's [CW, Feb. 9] letters, I call their attention to part of a notice appearing in the *Fort Lauderdale News*.

"... *Fort Lauderdale News* traditional help wanted headings must not in itself be considered as an expression of a preference, limitation, specification or discrimination based on sex.

"These headings are a convenience to our readers to let them know which positions would ordinarily be of more interest to one sex than the other because of the work involved."

Also, I feel sure that if one checks, he would probably find less than 10% of the computer professionals are women.

Considering the percentages involved and the problems they worry about, can the data processing industry really afford the loss?

Ray Johnston, UCDP
Huntsville, Ala.

DAAs 'Benefit Users' By Protecting Service

In a recent editorial you panned Ma Bell for charging for DAAs, because she, not the users, benefited from their use. Ma Bell benefits only because the user benefits. If the user gets poor service, which could be caused by someone else's faulty access equipment, who's hurt, besides Ma Bell?

The DAAs are there to protect your service.

R.H. Hutchins
Walnut Creek, Calif.

SS Plans Demand More News Comment

Why is Sen. Sam Ervin the one who quite correctly calls attention to the Information Processing Committee of the American National Standards Institute's plan to use the Social Security numbers as a standard identifier of individuals [CW, Feb. 9]?

Where is the reaction to this proposal from the data processing community?

The editor of *Government Data Systems* in the May/June 1971 issue answered a query about the use of a person's Social Security number in part as follows: "The inclusion of the Social Security number is, without doubt, a violation of federal statutes; however, it is one that is highly unlikely to be prosecuted at the present time and is thus, in that sense, a rather moot point."

Is it a moot point? Let's hear more about this from readers and *Computerworld*.

Brad Smith
University of California
Santa Barbara, Calif.

CW has editorially opposed the use of SS numbers as a standard identifier, but we too would like to hear from the DP community on the subject. Ed.

Computerworld welcomes comments from its readers. Preference will be given to letters of 150 words or less. *Computerworld* reserves the right to edit letters for uprposes of clarity and brevity. Letters should be addressed to: Editor, Computerworld, 797 Washington St., Newton, Mass. 02160.

Here's How to Fight Arrogant Systems

For years there has been talk about the problems of computers – the way computer errors are used as an alibi by almost anyone, and how much these items should be deplored by true computer professionals. For years the problems have been growing until now the whole matter is one of public, as well as professional concern.

From a systems analyst's viewpoint the current approach, for one reason or another, is ineffective, and something new must be done to really improve the situation.

Al Kocourek is a systems analyst in Columbia, Md. He has a fresh point of view on matters, which seems to take into account the problems with computer errors. He even has a way to possibly stop computer errors being used as alibis.

"When someone tries to blame the computer," he says, "correct him instead by pointing out that it was the application that failed, rather than the computer itself. Get him to blame 'a failure in our payroll system' or in the 'accounts receivable system.' Then the public, and the people inside the firm will know where to look."

That's good, constructive thinking, which offers a way to greatly reduce the frequency of computer error alibis.

This is also the type of constructive thinking which has made him the chairman of the Society of Certified Data Processors Committee on Unprofessional Practices. The idea of such a committee is new, and can be expected to be much more effective than a committee that must define professional practices.

The Taylor Report
By
Alan Taylor, CDP

It is a lot simpler to agree that something is wrong than to try to find out whether a practice is entirely good. Kocourek's committee can already offer something new to the profession – a list of identifiable, avoidable practices that it believes to be unprofessional.

In making up the list, the committee has broken data processing down into four major areas.

- Unprofessionalism in an application itself.
- Unprofessionalism in error control.
- Unprofessionalism in starting up an application.
- Unprofessionalism in failing to take proper account of where the output goes.

Inside the application the committee believes it is unprofessional to let something slip through that an edit routine could catch, or that involves altering or losing data records or fields without knowing about it at the time. Kocourek calls this data integrity, and is particularly worried when a record is noted as missing and the system is unable to define just when it was lost.

What is most necessary, he says, in error handling is that the application have a proper mechanism for reversing entries that have been made in error – and this means doing more than creating a false credit input to put a balance right!

He also believes that professional error control should go further – at least when an error has affected someone outside the system. He does not ask for much, but he does ask that the outside person affected by the error is told of the impact of the original error, and the degree to which the corrective action has been able to reverse any impact.

The third area Kocourek attacks involves the whole system – when it should be allowed to start operation. His argument is that a system should not be simply placed into operation without telling the people who will interface with it. His point is that as systems, when first started, have errors in them, we should warn people about this possibility. In fact, it is to our benefit to do so, and then they will probably give us data on odd occurrences sooner.

Finally, coming right out of the application itself, he approaches the user area – the people who have to use the output of various computer systems. In general, data processing supplies only one type of output, although it is sent to many types of recipients, and Kocourek feels this can lead to unprofessional practices.

He feels if the output is not suitable for the use of all recipients, then it has not been professionally prepared. Of course, for most systems this means there is little that can be said ahead of time, because the specific audience is not known.

But in one case the audience is known – when the system produces output for the user.

So Kocourek has taken this specific area, and defined that where the public receives the system output, it is unprofessional not to provide a simple form, with logically placed and and readable printed information on it. The computer output itself, he says, should crossfoot, should not use codes when avoidable, and then should use only meaningful ones, should explain the calculations fully and any dates involved should be realistic in regard to the current mailing situation.

Four areas that are impacted by data processing – and now four sets of practices which appear to be unprofessional. Al Kocourek and the Society of Certified Data Processors have now gone as far as they can without your help. What they need now is your opinion as to whether or not these practices are in fact unprofessional.

What do you think? The questionnaire on this page allows you to make your professional voice heard. Please complete it and let Al Kocourek and his committee do some more work the way that you – the data processing professional – want it done.

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Unprofessional Practices Survey

1. Failure to detect and act on flaws detectable by edit routines is unprofessional. ☐ Yes ☐ No

2. Failure to positively check on data integrity (number of records in files, etc.) throughout a processing application is unprofessional. ☐ Yes ☐ No

3. Failure to provide standard mechanisms for reversing errors is unprofessional. ☐ Yes ☐ No

4. Failure to provide any individual affected by a system error with each of the following is unprofessional.

Prompt notice ☐ Yes ☐ No
Full explanation of the errors' impact ☐ Yes ☐ No
Explanation of the corrective actions taken ☐ Yes ☐ No

5. Failure to provide for easy understanding of output by the full spectrum of recipients of computer output is unprofessional. ☐ Yes ☐ No

6. Where the public is an expected recipient, that failure to provide each of the following is unprofessional.

Simple forms ☐ Yes ☐ No
Codes only when unavoidable ☐ Yes ☐ No
Meaningful codes ☐ Yes ☐ No
Fully explained calculations ☐ Yes ☐ No
Arithmetically checkable information ☐ Yes ☐ No
Easily readable and logically placed printed information ☐ Yes ☐ No
Realistic dates taking into account mail and delays ☐ Yes ☐ No

Comments and explanations_____

_____

(Continue any answers on separate page, if necessary.)

7. How do you think the Committee on Unprofessional Practices should operate?_____

_____

(Continue any answers on separate page, if necessary.)

8. How can you help? _____

_____

Name_____

Address _____

CDP Holder ☐ Yes ☐ No

SCDP Member ☐ Yes ☐ No

When completed please return to Al Kocourek, Committee on Unprofessional Practices, c/o Computerworld, 797 Washington Street, Newton, Mass., 02160. Copies of this form are more than welcome if you do not want to cut up your paper.

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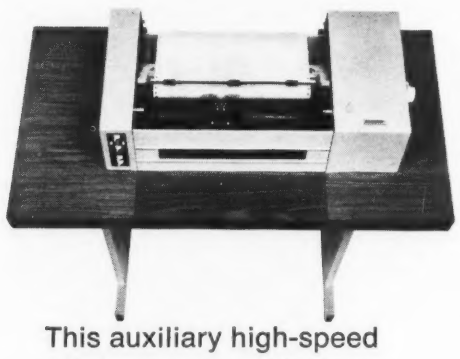

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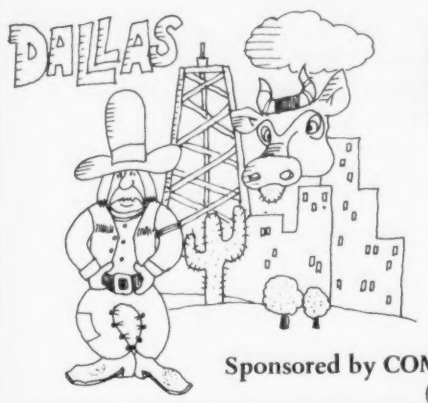

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The Professional's Viewpoint

Users Seek Mag Tape Improvements

The Boulder Valley Tape Users Center is currently working to develop a central user-oriented base of knowledge including uses and faults of computer magnetic tapes. It is soliciting comments from users about what improvements they would like to see in tape hardware, and what problems users find most troublesome.

The following responses are among those received.

Additional comments can be sent to the "Professional's Viewpoint," *Computerworld,* or directly to The Boulder Valley Tape Users Center c/o Al Kolwitz, 4711 Qualla Drive, Boulder, Colo.

The "Professional's Viewpoint" is prepared by the Society of Certified Data Processors in conjunction with the editors of *Computerworld.*

Rewrite Record in Middle of Tape

"Think the unthinkable," regarding system improvement.

The best and most overwhelming productive improvement in all standard IBM-compatible mag tape systems (including IBM systems themselves, of course) would be to permit rewriting a record in the middle of the tape, with a record of the same length.

The only hardware change required to permit this with 100% guarantee of protecting the following record would be to move the erase head somewhat closer to the write head, and/or to extend the length of the inter-record gap (IRG) by about 50%.

Thus, when stopping after a write operation, about one-third of the IRG would have been freshly erased, and if no further writing occurred, the old IRG at that point would provide about the last two-thirds of the "new" IRG which follows the newly written record. The random variations in tape positioning, etc., would practically never let the following record be touched.

At present, IBM's tape units guarantee the following record will be clobbered, if one tries to rewrite any record. This is because, for some reason, the erase head is positioned so far ahead of the write head, and stays active for so long after the write operation has written the last character of the record, that it always erases the first few characters of the following record.

It always erases more than the full IRG. (Whether by malevolent design, by clumsy goof, by profitably fortuitous circumstance, who can say?).

IBM may claim the IRG is kept small to increase tape utilization and decrease running time. However, consider the benefits which might outweigh this decrease in average effective speed. A large fraction of the tape drives could be eliminated in each installation, since only one drive (not two) would be needed to update a tape.

Smaller CPUs could do the same job, because the CPU cycles used in transferring the unchanged records from one tape to the other would be eliminated. These rental savings would obviously more than compensate for the dilution in average tape density caused by somewhat longer IRGs.

Although IBM-type tape systems dominate the market, systems using "rewritable" tape records have been around, and I have worked with some. Some of these used "addressable" tape formats, but that is not what I am talking about.

I am claiming that the regular IBM-type tape systems could allow one to rewrite any given record, without clobbering the following record, if the amount of tape erased automatically at the end of each write operation were limited to about one-third of the total IRG.

Leon Davidson, White Plains, N.Y.

Selected Tape Bits

"Better control of read-write errors. Users cannot afford for machine to stop, error should print and bypass."

Mike Williams, Amarillo, Texas

"Forward skip at rewind speeds to give a pseudo random access capability (like Cassette System by Sykes)."

R.T. Duquet, Bowling Green, Ohio

"Accurate tape performance records should give a positive indication as to what area action should be taken."

Dan Bartell, New York

"Ability to read non-standard bit patterns (machine portability, user parity checking bit handling)."

C. Hixson, Berkeley, Calif.

"Software minor point compared to hardware. Hardware costs should be lowered."

M. Ingram, Pomona, N.J.

"Enclosed tapes similar to cassettes, eliminates damage, dirt, faster change, etc. Could be in a vacuum."

James Odom, Hartford, Wis.

"Greater compatibility to facilitate data exchange."

N. Michael Slater, Charleston, W. Va.

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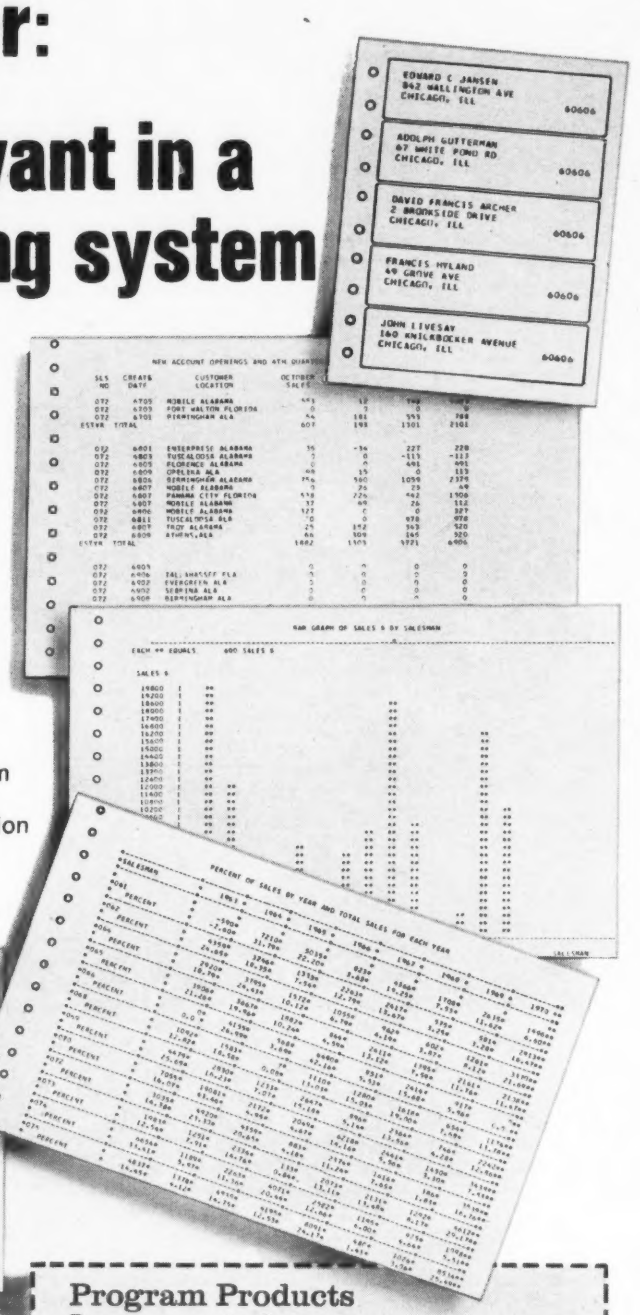

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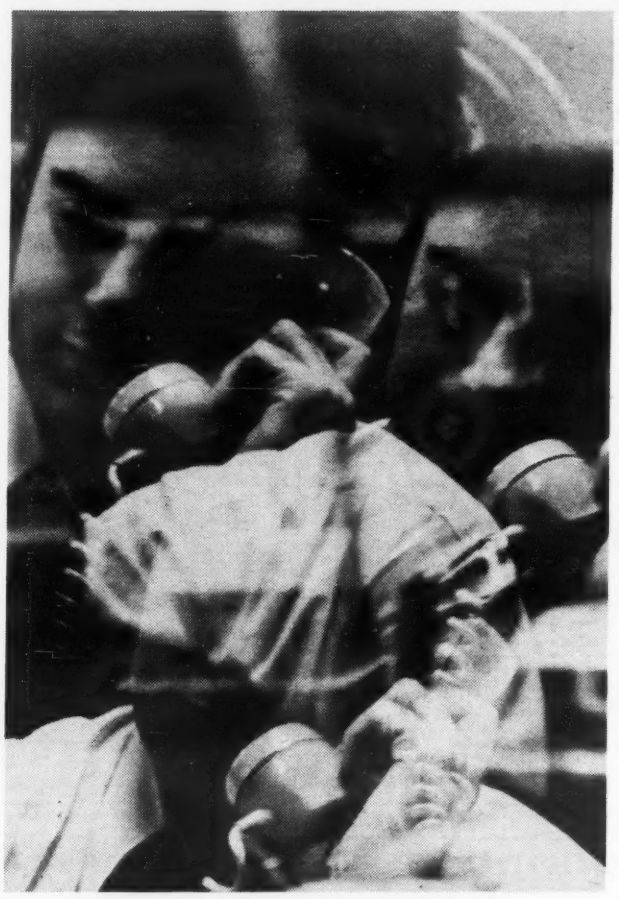

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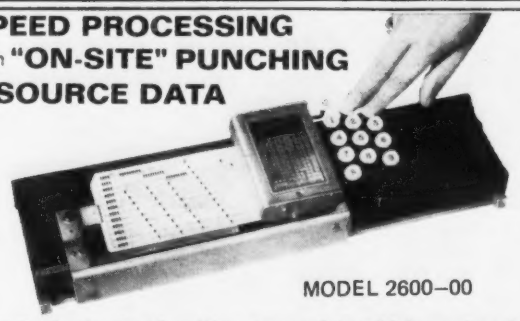

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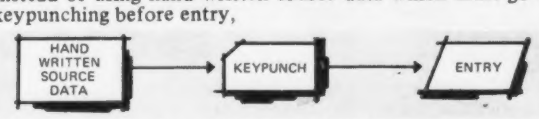
Instead of using hand written source data which must go to keypunching before entry,



you can punch source data into cards at any remote location using the Wright Punch. These cards can then go directly to data entry.

Find out how this remarkable, inexpensive yet reliable precision portable card punch can help you to speed data flow, reduce keypunch bottlenecks and save money. Circle readers service number or write to Electromechanics Department, Wright Line, A Division of Barry Wright Corporation, 160 Gold Star Boulevard, Worcester, Massachusetts 01606.

Other models available (manual and electric) for punching Hollerith type holes into plastic tabulating, credit, ID and badge cards. Special versions available. OEM and Dealer inquiries invited.

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Cabbie's Helper Lowers Fares, Aids Scheduling

DAVENPORT, Iowa – Dispatchers at the Royal Cab Co. have a real-time right-hand assistant helping them improve scheduling and offer cheaper fares. The 21-cab company also gets detailed printouts of expenses and rider patterns from the computer.

Taking the location and destination of the caller as input, the real-time IBM System 3/6 selects the cab closest to the call, and the dispatcher makes the assignment. While calling for a cab, the prospective rider can learn what the fare will be.

The cab company previously used a five-zone system for determining fares. Under the system, a ride beginning and ending near the suburbs cost more than a ride of equal distance close to the center of the city. Also, a short ride that crossed into a different zone was more expensive than one that stayed within the same zone.

Now, with the computer storing set fees for distances and the abolition of the zone system, "The fares for 80% of all trips have been reduced. Some rides that used to cost $1.25 are now 50 cents," said Robert Cherry, owner of the Royal Cab Co.

The system permits more efficient loading of cabs by conducting a search for riders within a reasonable distance of each route, which enables the dispatcher to assign drivers additional riders.

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New '72: BASIC Programming for Business
C. Joseph Sass, University of Toledo. Designed to give the beginning student a workable understanding of the language BASIC. 1972 Est. 320 pp.

New '72: Introduction to Computer Science: An Interdisciplinary Approach
Terry M. Walker, University of Houston. Features a wide selection of problems from many disciplines. Language Supplements for FORTRAN, BASIC, PL/1, and a Solutions Manual are available. 1972, Est. 840 pp.

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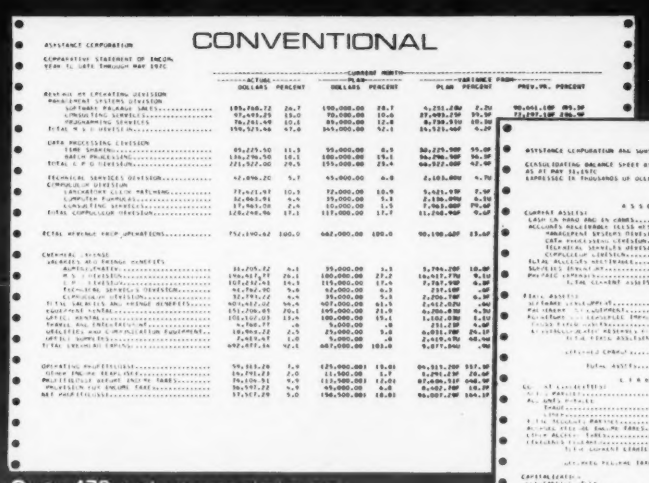

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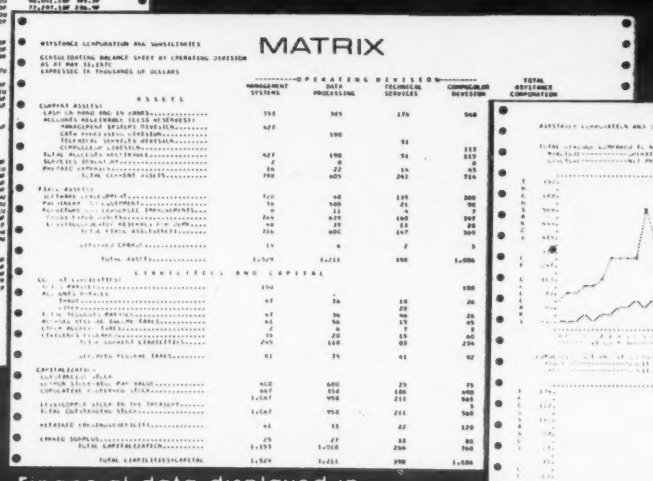
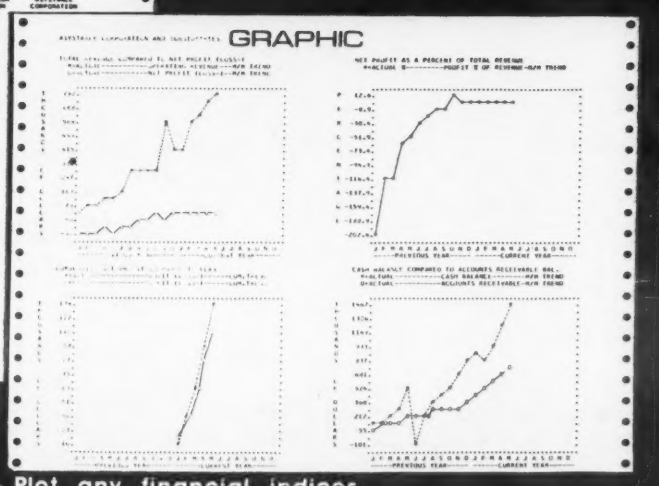


Financial data displayed in a column/row arrangement.



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Random Notes

Labs Use IBM S/7 Program To Watch Chromatographs

WHITE PLAINS, N.Y. – Laboratories with IBM System 7 CPUs can save staff time and effort in the analysis of complex substances with the Gas Chromatograph Monitoring Program from IBM. An S/7 can collect and process data from 16 chromatographs simultaneously.

The program generates printed reports directly from the instrument data, freeing technicians from observation, calculation and reporting chores and providing results faster than by manual methods. A Field Developed Program (FDP), the new software carries a monthly charge of $225 for the first 12 months of use, after which charges are waived.

Comserv Joins Hudson's Bay Co. To Aid Canadian Manufacturers

MINNEAPOLIS – Canadian users in the manufacturing and distribution industries will be able to tap the combined facilities of the Hudson's Bay Co. of Canada and Comserv Corp. through a newly formed joint venture to be based in Winnepeg.

The new company will use Hudson's Bay computer centers in Vancouver, Montreal and Winnepeg to support facilities management operations. At the same time, it will also market Comserv's information system, Maps, which is tailored to manufacturers' and distributors' needs.

Comserv Corp. is at 3050 Metro Drive, 55420.

Infonet Adds Houston Office

HOUSTON – Computer Sciences Corp. has extended its Infonet time-sharing capabilities to the Houston area, with the opening of a facility at 1535 West Loop South.

The new office can provide services of special interest to Houston firms in finance, engineering, manufacturing, chemical processing and petroleum production, as well as a wide range of general business applications, the company said. Reports too bulky for user terminals can be directed to a high-speed printer at the local facility.

T/S Net Handles 250 Users

BUFFALO, N.Y. – More than 250 on-line terminals can be handled concurrently by National Time Sharing and Data Services Inc., 17 Court Street, 14202. Subscribers may use teletypewriter, visual-display or other voice-grade terminals, the company said.

DOS 'Stabilization' Not End of Support

By Don Leavitt
Of the CW Staff

WHITE PLAINS, N.Y. – "No, it doesn't mean that we're refusing to support the Disk Operating System, not even for the 360."

That was an IBM spokesman's reaction when asked to clarify the company's announcement that DOS Release 26 is a "functional stabilization" of the system for the 360 user. And in a way he's right, but only to a point.

Several components of DOS have already been given a lower support status than they once had, and other components will follow during the next year. IBM has said that March 31, 1973, is the last day on which users can expect no-charge support for Release 26 [CW, Jan. 19].

Help will still be available from IBM, however, even after March 1973, but only in correcting problems, not in enhancing the capabilities of DOS for the 360 user.

Problems reported to, and accepted by, the centralized programming staff will be worked on "until a solution is forthcoming" and the solution will be distributed without charge. Otherwise, help will be provided only on a billable-time basis when a user asks for it.

The DOS situation highlights the distinctions IBM makes in its classification of software support. The company separates system control programming from program products, for example.

Program products include application programs, conversion aids, sort programs and language processors, and are carried in one of three service classifications:

- Class A includes, without charge, centralized programming service and field engineering support at the user's location to analyze defects, make temporary fixes and report problems to the central program staff which prepares enhanced and corrected versions of the software for general distribution.
- Class B, mostly applications programs, includes the centralized programming support without charge, but field services provided by field engineering personnel are chargeable.
- Class C has no centralized support and field engineering is available only on a billable basis.

West Indians Cut Data Prep Costs

NEW YORK – Users faced with manual-to-DP file conversions or other abnormally heavy data preparation requirements could reduce their anticipated costs by 30% with the services of Key 'Universal Ltd.

The company, headquartered here, operates a facility on the island of Grenada in the West Indies, which provides keypunching, keyverifying and typing for scanning. Clerical editing and coding, and market research questionnaire coding and keypunching can also be done there.

Key 'Universal has IBM 029 punches and 059 verifiers and typewriters at the Grenada site, and users can normally expect a one-week turnaround on their work.

The company usually works with a user's duplicate source file, but if a paper copy of the file is not available, Key 'Universal will microfilm the original and send the film to Grenada.

At the data preparation center, the file is reviewed and basic questions about what is to be done are resolved by telephone or teletypewriter conference before the work begins.

Key 'Universal will quote each job separately, on a price per thousand cards to be prepared, based primarily on quality of the source material, completeness of job specifications and time requirements.

Key 'Universal is at 444 Park Avenue South.

Financial Modeling, Inventory Control System Up on Tymnet

PALO ALTO, Calif. – Financial planners and operational managers can each benefit from application packages newly installed on the Tymnet time-sharing service of Tymshare Inc.

Designed primarily for financial modeling, the Tymtab package can also produce a variety of reports showing past performance and current conditions of the user's company. In addition to formatting the reports, Tymtab supports a range of mathematical computations on which the reports are based.

Tymnet's new general-purpose inventory control program is said to keep stock records current with a minimum of input, and to generate a number of both general and specialized reports for management.

Within each part record, the program shows quantity in stock and on order, cost, availability of part, quantities committed to contracts and prior work orders, last issue document number and quantity and previous transaction codes.

All of the Tymnet services are available on a local-call basis from any point in the U.S.

Tymshare corporate offices are at Suite 220, 525 University Ave., 94301.

Module 'Asi-sts' 'Total' Users

TORRANCE, Calif. – Users should get faster programming and faster processing by coupling the capabilities of the Asi-st data management system and the Total data base management system through an interface module from the Asi-st developer, Applications Software Inc. (ASI).

Normally, Total users have to code application programs in Cobol or some other procedural language. With the link-up, even non-programmers can access Total data bases with Asi-st coding, which is said to require only one-tenth the number of statements as comparable Cobol logic.

The Asi-st user language is described as primarily tabular but with some free-form entry elements. The full system provides file creation and maintenance based on events or transactions, data retrieval and report generation. A series of exits are available to utilize other programming languages

The full Asi-st system costs $33,000 and the interface for the Total link costs another $8,000. A "compact" version of Asi-st, supporting retrieval and report generation in batch or remote environments, costs $20,000. The interface between compact Asi-st and Total is $10,000.

ASI is at 21515 Hawthorne Blvd., 90503.

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A few weeks ago, Value Computing announced, in *Computerworld*, the availability of Comput-A-Charge, an automatic system for billing IBM DOS/OS computer users which solves the multi-programming billing problem.

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"I almost bought the wrong job accounting system. In my attempt to save my company time and money, I was about to choose an over-priced inadequate system. Comput-A-Charge stopped me from going down a blind alley. With Comput-A-Charge, I can go into other systems, like scheduling and tape control."

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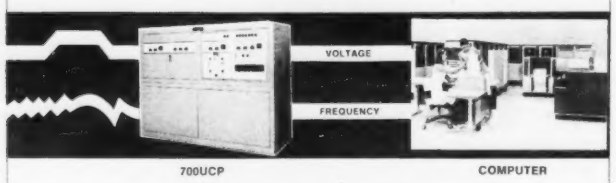

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PSC

Phone-less DAA Saves on Bill

By Ronald A. Frank
Of the CW Staff

HARTFORD, Conn. – Some users of automatic Data Access Arrangements (DAAs) can get a reduction on their telephone bill thanks to a new tariff recently instituted by the Southern New England Telephone Co. (Snet).

Up to now installations with customer-supplied modems have had to include the price of a telephone as part of an automatic DAA installation. But non-carrier data equipment with automatic-answer capability usually operates without a telephone. In such applications, a central site may automatically poll remote locations, activating the automatic data sets. Time-sharing users might also benefit.

Although the Snet tariff is now limited to one Bell System operating company, an AT&T spokesman described it as "an experiment" that could be expanded if more data users indicate a need.

The Snet tariff provides a lower rate for "unattended sending and receiving" installations. The savings amounts to $1.10 per line each month. For example, an automatic CBS type DAA costs $5.45/mo. Without the telephone, the new rate drops to $4.35/mo.

Users operating automatic answer data networks might save the monthly cost of a phone at each installation if the new tariff is applied on an interstate basis. "Present DAA [interstate] tariffs do not provide for a reduced rate when a telephone is not provided," an FCC staff spokesman said. But a request for such a service reduction would probably be given careful consideration, he added.

Communications

Interconnection Issue

Naruc Opposes FCC Work

WASHINGTON, D.C. – The National Association of Regulatory Utility Commissioners (Naruc) told an FCC study committee on interconnection that "the vigorous pursuit by the FCC staff of a liberalized interconnection policy to "benefit big users and manufacturers represents an atrocious misuse of governmental resources."

The FCC study committee is working to develop certification standards for PBX equipment, but the organization's statements on interconnection could affect all classes of non-carrier devices. The Naruc opposition to FCC-sponsored standards for the interconnection of customer-provided equipment is believed to be part of a campaign to have each state regulatory agency deal separately with interconnection issues.

The Naruc letter said liberalized interconnection will lead to a "bureaucratic jungle" and added that the certification of customer-provided equipment "is beyond the lawful authority of the FCC."

In a related move, the New York Public Service Commission (PSC) told the FCC, in a letter, that revenue losses from the increased use of customer-provided equipment "may increase" intrastate phone rates.

The New York letter is significant because the PSC is currently considering a final decision on a proposal by the Rochester Telephone Corp. to simplify the interconnection of non-carrier data equipment users.

Unusual Usage No Emergency, Calif. PUC Says

SAN FRANCISCO – Unusual telephone usage, either by data communications or other users, does not now "pose an emergency situation in California," according to the State Public Utilities Commission (PUC).

While additional studies will be undertaken, the PUC found no reason to approve a proposal to levy a timed Data Exchange Service rate on all time-sharing and other data calls made within the state. The PUC ordered the Pacific Telephone & Telegraph Co. (PT&T) to conduct additional "comprehensive studies" to determine whether any phone service problems are the result of unusual usage from data or other users.

The PUC told PT&T to file quarterly reports with the commission on the distribution of telephone usage identifying unusual classes of customers. Data on time-share computer lines showing the breakdown of inward calls between toll and exchange service was also requested.

The unusual usage issue evolved from a PUC staff recommendation in 1970 that time-share users were responsible for overloading telephone facilities in some California locations.

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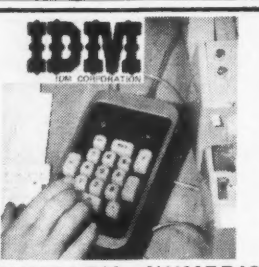

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Bits & Pieces

Batch Terminal Includes Communication Processor

SANTA ANA, Calif. – The low-cost L-3 remote batch terminals from Data Computer Systems can be used as a 2- or 4-wire half duplex system. It includes a communications processor with 800 characters of memory, console, 300 card/min reader and a 100 line/min 132-column printer.

The L-3 is double-buffered and includes full transparency, automatic answering, horizontal tabbing and a record counter. Blank compression, terminal identification, message security and multipoint line control are optional.

Monthly rental, including maintenance, is $590/mo on a one-year lease. Delivery is 30 to 60 days from 17131 Daimler St., 92705.

Terminal Replaces 1052/1056, Offers High Speed, Lower Cost

ARCADIA, Calif. – The CTC punched card terminal from Western Telematic, Inc., combined with an IBM Selectric typewriter, can replace the IBM 1052/1056 with two to four times the card throughput at lower cost, according to the company.

The system operates on 360 and 370 systems and uses IBM time-sharing software including TSO, CPS, RAX and CRJE. The CTC is connected between the keyboard printer and data set with existing data set cable without hardware or software modifications.

The CTC rents for $135/mo. Delivery is six weeks from 5507 Peck Road, 91006.

Kit Contains Programming Tools

ATLANTA – The Programmer's Kit, consisting of 10 programming tools in a fitted leather briefcase, is available from Radix Precision. Made in West Germany, the kit includes: Hexadat hexadecimal calculator, Universal Lux decimal calculator, decimal/hexadecimal conversion table, slide rule, pencil and .5 mm leads, ballpoint pen with stylus, template, large eraser and programming pad. Priced at about $100, the kit is available for immediate delivery through Box 13861, 30324.

A/D System Has TTY Connection

INDIANAPOLIS, Ind. – Esterline Angus 5, 20, 40, 100 and 200 channel Programmable Data Acquisition Systems (Pdas) for A/D recording provide Teletype ASR 33 interconnection at a system cost under $4,500.

The systems are designed to use the ASR 33 at its maximum speed of 10 char./sec.

The Pdas systems are designed for laboratory, pilot plant, industrial and field applications.

The Esterline Angus can be reached through Box 24000, 46224.

Burster Slits, Imprints, Stacks

DAYTON, Ohio – The Model 1537 Forms Burster-Imprinter from The Standard Register Co. performs slitting, imprinting, bursting and stacking of continuous forms.

Small amounts of data, such as signatures, dates or advertising slogans can be imprinted on a range of single and multicopy forms at up to 250 ft/min.

The units are priced at $4,395 to $4,595, with initial delivery scheduled for March 15.

Uses Top Edge

Independent Has 96-Column Stub Card

By Frank Piasta
Of the CW Staff

PHILADELPHIA – A "stub" version of the 96-column punch card and two card readers for the new format promise System 3 users added flexibility in data acquisition.

Developed by Bridge Data Products, Inc., the stub card is novel in that the stub portion is the top edge, rather than one end, of the card. Because of the format, none of the data capacity of the card is lost when the stub has been removed.

Carries Three Lines

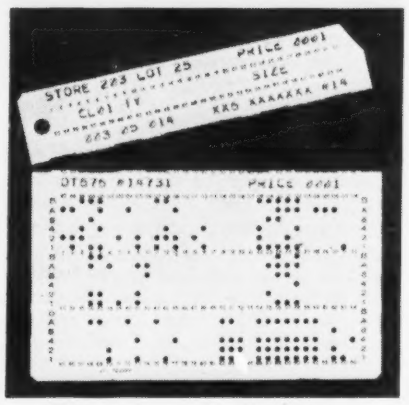
The stub, however, can carry up to three lines of 32 printed characters for visual identification. A hole can be punched in the upper left corner of the 5/8 by 3-1/4 in. stub, enabling it to be hung from merchandise.

The card format is especially suited for such applications as retailing, banking, manufacturing and distribution, according to Bridge. Retail stores and manufacturers can use the cards as hanging tags and banks can bind them into booklets for loan payments or Christmas Club deposits.

Because 96 characters of data can be printed on the stub portion, it can provide useful information even after the punched portion has been detached.

The 8603 and 9603 card readers are said to be the first devices to read both the stub cards and the standard 96-column S/3 cards.

Both models are plug-to-plug compatible with the S/3 series. The 8603 can read 500 card/min into the Model 6 and 750 card/min into the Model 10. The 9603 can be attached to the Model 10 and is rated at 250 card/min.



96-column card from Bridge Data Products.

Both models are transparent to the S/3 and operate with standard IBM software, according to Bridge.

The combination of the stub cards and readers can help save time on both ends of a unit record application, according to the company. The cards can be punched and printed on any S/3. Because the detached data portion of the cards can be read directly by the Bridge reader, they can be processed without keypunching or data conversion, reducing turnaround time in the preparation of management reports, the company explained.

Prices of the readers start at $250/mo on a three-year lease. Purchase prices range from $6,500. Bridge is at 738 S. 42nd St., 19104.

Graphics Display System Shows Charts, Alphanumerics in Color

GOLETA, Calif. – Graphics and alphanumeric data can be displayed in up to 32 colors or in black and white with a graphics display system from Spatial Data Systems.

The System 800 uses available television equipment to display halftones, graphs, charts, symbols, graphics and alphanumerics as well as pictures and objects, with the color capability adding higher contrast and easier recognition, according to the company.

The system consists of the Model 805 color display, Model 810 digital processor, Model 810-1 magnetic tape unit and the 108 picture digitizer.

Different Inferfaces

The 805 display can be interfaced directly to the user's computer system or can be attached to the other system components. It features an operator-controlled color keyboard, joystick-operated cursor and a fast picture transfer rate.

The flicker-free display is refreshed at 60 field/sec. Arrays are constructed rectangularly of 512 by 512 picture elements. Each element can be displayed in 32 colors, under program control, or in black and white using a 32-level grey scale.

A 19-in. shadow mask picture tube with 670 by 500 color dot trios is used to store 512 by 512 raster points and display 512 by 489. The 262,144 picture elements can be transmitted to the display at a peak rate of 10 M/sec. Geometric distortion is less than 2% overall.

The 805 is priced at $54,500 and is available on 120-day delivery from 132 Aero Camino, 93017.

Printer Replaces 1403 on 1130

PLAINVIEW, N.Y. – A plug-to-plug compatible printer from Infotec, Inc. is designed to replace 1403 Model 7 printers on IBM 1130 systems.

The 600 line/min PS-1130 printerscan operates either with the standard IBM-supplied software with 120 char./line and a 48-character set, or with Infotec-supplied PRNZ and PRNT3 replacement routines that allow 132 columns and a 64-character set. It can also handle printouts from 3-1/2 to 19-in. wide.

A processing time reduction is also claimed for the PS-1130, compared to the 1403, because only half the cycle steal operations have to be used to print a given amount of data, Infotec said.

The printer is designed to plug directly into the SAC (Storage Access Channel) 7490, with no multiplexer required. Alternatively, the device can be used with the SAC II 7490 channel. The Infotec Storage Access Channel Extender allows the printer to be used in conjunction with other peripherals, such as magnetic tape drives, operating on the channel.

The printer has 10 char./in. spacing at 6 line/in. Paper slew rate is 27-1/2 in./sec. Up to six copies can be printed

The PS-1130 is priced at $19,000. Third-party leases carry a price of $795.50/mo over a three-year period. The lease price includes maintenance by Honeywell EDP Service. Delivery is immediate from 70 Newtown Road, 11803.

Adds Terminals Add Cassettes

Users of Applied Digital Data Systems Consul 880 and MRD 700 CRT terminals will be able to add the 810 Cassette Recorder which can receive or transmit data at five speeds from 110 to 2,400 bit/sec. The recorder is priced at $1,850. Delivery is 30 days from 100 Marcus Blvd., Hauppauge, N.Y.

Grumman Announces Prices for Masstape

GARDEN CITY, N.Y. – Grumman Data Systems Corp. has announced prices for its Masstape high-performance, on-line, modular mass storage system.

A basic system providing 15.8 Gbytes of on-line storage with four simultaneous read/writes and one host interface will rent for $11,686/mo. The purchase price is $350,500 with a monthly maintenance charge of $1,754.

An expanded system with 33.6 Gbytes of storage, 16 simultaneous read/writes and two interfaces will rent for $27,962/mo and sell for $838,800. Larger configurations can approach $2 million, the company said.

First shipments are scheduled for the third quarter of 1972 from 711 Stewart Ave., 11530.

A Rebel Red CPU?

WALTHAM, Mass. – Computer rooms may lose their traditional drab, utilitarian atmosphere and take on some of the glamour of high-fashion salons if the new optional panel colors offered by Honeywell for its 6000 Series of computers catch on.

Such exotic colors as rebel red, marine, lobster and scarab may be chosen, at extra cost, for the system end panels. The more prosaic Caribbean blue, hunter red, Aztec yellow and maritime green are no-cost options.

The high point of the Honeywell "collection" is a system with chamois-colored plain panels, dark-gold ribbed panels and end panels in a choice of rebel red, marine, lobster or scarab.

Panels for currently installed Series 400 or 600 systems can be obtained to match those of the new 6000 systems.

Make way for the new breed of EDP consultants, the interior decorators.

Graphics Terminal Features Display, Tablet

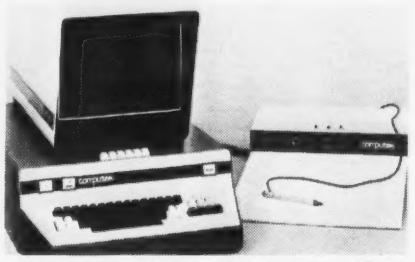
CAMBRIDGE, Mass. – Computek has added two low-cost interactive graphic stations with integral graphic input tablets to its 400 Series.

The tablet converts pen position into digital form while the pen writes, draws or points on the tablet and may be used as a scratch pad, a graphic pointer, for entering written characters or for tracing drawings.

The units use a CRT display with hardware-generated vectors, curves, smooth-stroke alphanumerics and special symbols.

DVST Display

The 415GT generates vector graphics and alphanumerics on a DVST (direct vision storage tube) display. The 420GT station also includes a curve graphics generator that paints a smooth curve with specified initial and final slopes between any two points on the screen. The vector generator in either unit draws complex jagged-line displays in a fine mode or flow



Computek 415GT with scope, tablet

charts in a coarse mode with 2 byte/vector.

A full-resolution incremental vector mode permits repetition of a picture element on the screen from one stored description. An absolute vector mode resets the x – y registers to an absolute position for every vector. Characters are drawn with 1 data byte.

The CRT presents flicker-free images without refresh. Display accuracy is compatible with that of the graphic tablet (±.05%) and screen capacity is 10,000 vectors or 3,400 characters on an 8.25 by 6.4 in. area.

Alphanumeric control of the station is Teletype-compatible with graphic interaction controlled by 2- or 4-byte sequences. A Fortran IV package is available with bit-packing, utility, display formatting, scaling and windowing routines.

Parallel interfaces to more than 30 computers have been developed. Also available are RS 232-C full- and half-duplex serial interfaces at speeds to 3,400 char./sec for text.

The price of the 415GT is $6,950, while the 420GT sells for $7,450. Delivery is 30 days from 143 Albany St., 02139.

DUO 360/370 shrinks OS manpower conversion costs up to 90%.

Going from DOS to OS is a battle.

For one thing, programmer man-hours are monstrously inflated by the need to reprogram everything from DOS. With DUO 360/370 you get *OS results* without reprogramming.

For another, OS test time is an obstacle. DUO cuts it by as much as 90%.

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Passbook Reading Offered as Option On Teller Terminals

DETROIT – Automatic Passbook Reading has been added as an option to Burroughs Series TC 700 on-line teller terminal computers and TC 1700 on-line financial supervisor terminals.

The passbook is first inserted into the terminal, the transaction amount is keyed and the passbook returned to the customer.

The option results in faster customer service, improved window procedures, elimination of manual entry errors, positive passbook alignment and the ability to add automatic passbook reading to existing passbooks, according to Burroughs.

The automatic reading uses a magnetic stripe on the back of the passbook to store the account number, last recorded balance and passbook line number. When the passbook is presented to a teller and inserted in a terminal reader, an automatic inquiry and update of the central computer files results. Data from the stripe is automatically transmitted eliminating manual listing of data.

The 2-1/2 in. by 1/4 in. magnetic stripe can be attached to existing passbooks. On new books, the stripe can be provided by the printers on single page and multiple page passbooks.

The Automatic Passbook Reading feature is available at a lease price of $30/mo or is sold for $1,190. The units, which can be installed on new equipment or on terminals already in use, will be available during the fourth quarter of 1972.

Bits & Pieces

System Cuts Newspaper Chores

HIGHTSTOWN, N.J. – A low-cost mini-based turnkey system, the Tal-Star Computer Systems, Inc. T800, is intended for newspaper production.

The basic hardware components include a General Automation SBC-18, Teletype ASR 33, 250 card/min reader, 100 char./sec tape reader and punch and a 4M character disk drive.

In addition to a disk monitor system, software includes the Modular Universal System for Typesetting (Must), Classified Advertising Production System (Caps) and Text Editing System (Edit). An RPG is $3,000 extra.

The Basic T800 has a price of $60,000 and is available on a four-month delivery schedule from 10 Lake Drive, 08520.

Mylar Ribbon Cuts OCR Rejects

MURRAY HILL, N.J. – A Mylar computer ribbon designed for OCR applications, the OCR Multipass Film Ribbon from Precision Computer Ribbon Co., promises exceptional ink bonding to assure a jet black image to reduce rejects and misreadings.

It is available for most computers for $18.65 from 82 Floral Ave., 07904.

Meet the mind expander. Monolithic Main Memory from ITEL.

Now there's an easy, economical way to expand IBM System/360 or 370 memory: add on Monolithic Main Memory from ITEL. (The Monolithic Main Memory is manufactured to ITEL specifications by Advanced Memory Systems of Sunnyvale, California.)

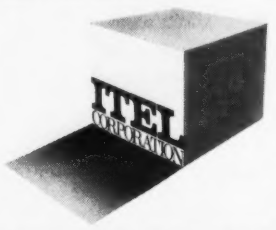
This monolithic memory lets you upgrade core at a lower price than core. It's far more reliable than core. And you can maximize capacity. For example, you can expand the 360/30 to 128K, the 360/40 to 512K, the 360/50 to 1024K and the 360/65 to 2048K. For the 370, we match IBM byte for byte, and offer substantial savings in cost and space.

The secret of ITEL's superiority over IBM core is found in its basic monolithic memory module. This semiconductor chip contains 1024 bits of storage. These memory elements are fabricated in batches of thousands, which cuts costs dramatically. And most wired interconnections are eliminated, so there are far fewer potential sources of failure.

But even monolithic memory elements can sometimes fail. That's why ITEL has ECC: Error Checking and Correction. Should a memory element fail, ECC corrects the error instantly. There is no effect on computer operations or processing. The operator is notified by an error light and maintenance can be performed without interrupting the memory's operation.

The Monolithic Main Memory from ITEL means savings in cost. Savings in speed. Savings in maintenance. And, in some cases, savings in floor space. It's completely compatible with IBM System/360 and 370. Handles all memory size changes. And it can be leased as well as purchased, so you can meet your immediate memory needs now without a large outright purchase.

ITEL is out to improve the system. With technical advancements. Complete corporate sales support. National field service. Around-the-clock maintenance. And with the people and financing policies that can create a customized solution to your particular problems. So meet all the ITEL mind expanders at your nearest ITEL office.



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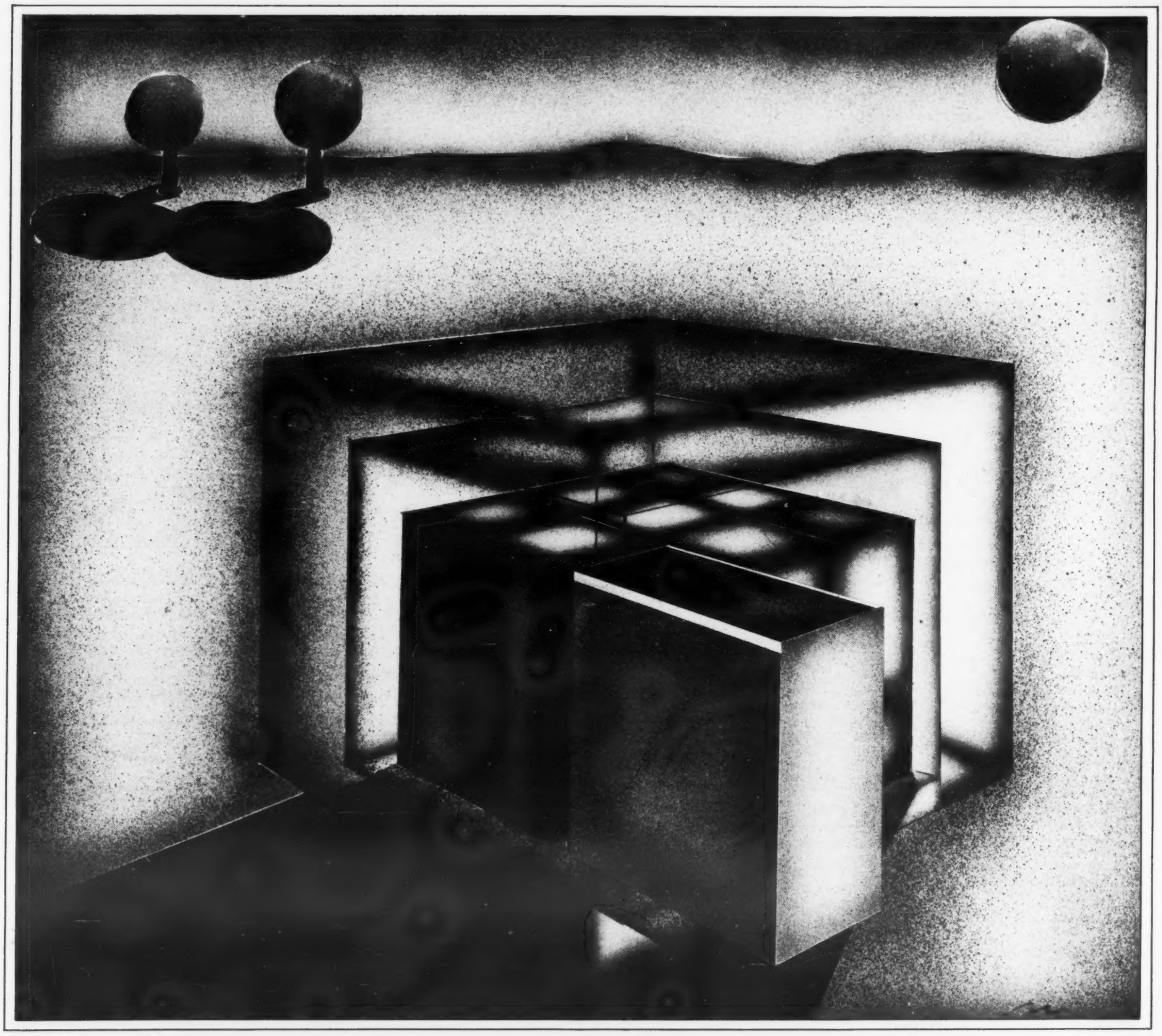

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A Computer Users' Forum, run by professionals and designed to bring regional users together in manageable groups to discuss mutual EDP problems with other users, and with regional and national experts . . . and a chance to study and evaluate new equipment and services that will be shown in the presentations of leading EDP suppliers comprising the Exposition.

The Format

Each Day 9:00-9:40 Keynote address by a nationally known expert – an independent, not a vendor – on the day's main subject. Sets the stage for discussions.

9:40-10:30 Panel discussion led by regional experts chosen for their progressive management principles. Questions encouraged.

10:40-11:45 Workshops – panel members conduct separate workshops. Your specific questions fielded, worked out.

12:15-1:30 Conference luncheon – keynote speaker summarizes chief points covered during panels and workshops.

1:00-9:00 Exhibits open, stay open til 9. Exhibitors will show the latest in hardware, software, services.

The Subjects

First Day: Data Entry

Keynote speaker; Lawrence Feidelman, President, Management Information Corp., Cherry Hill, N.J.; Editor, *Data Entry Today.*

Panels and workshops will be grouped by these four subjects:

- Keypunch replacement; key to tape, disc and cassette devices.
- OCR.
- Intelligent terminals – distributed processing.
- Direct data entry/source data automation.

Second Day: Data Communications: The Choices

Keynote speaker; Dr. Dixon Doll, Data Communications Consultant, faculty member, Graduate School of Business, Eastern Michigan University.

Panels and workshops will be grouped by these four subjects:

- Communications equipment from mainframe makers and common carriers.
- Communications equipment from independent suppliers.
- Data transmission via private (lines, microwave) networks.
- Data transmission via carriers (lines, microwave).

Third Day: Operational Efficiency

Keynote speaker; Charles Lecht, President, Advanced Computer Techniques, N.Y., N.Y., author of *The Management of Computer Programming Projects.*

Panels and workshops will be grouped by these four subjects:

- Core extensions.
- System/utility software modifications.
- Independent peripheral usage.
- Dedicated systems vs. general purpose computers.

Panel Members & Workshop Leaders

The regional experts who will run the panels and workshops have been chosen from a wide range of firms and institutions. Some will participate in more than one session, depending on their experience and expertise.

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Exposition Sites & Forum Schedule Please Check City Where You Will Attend

City	Location	Dates
☐ New York	Americana	Feb. 29-Mar. 2
☐ Washington, D.C.	Washington Hilton	Mar. 7-9
☐ Atlanta	Regency Hyatt House	Mar. 14-16
☐ Dallas	Market Hall	Mar. 21-23
☐ Los Angeles	Ambassador	Apr. 4-6
☐ San Francisco	Fairmont	Apr. 10-12*
☐ Chicago	Palmer House	Apr. 18-20
☐ Detroit	Cobo Hall	Apr. 25-27

**Monday-Wednesday Schedule*

Please register me for:

☐ **DATA ENTRY – Day One;** ☐ **DATA COMMUNICATIONS: The Choices – Day Two;**
☐ **OPERATIONAL EFFICIENCY – Day Three;** ☐ **EXPOSITION ONLY**

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Indian Keypunch Service Draws Trainees, Contracts

PHOENIX – Several business ventures, all intended to help the Indians, have come and are gone from the Pima-Miracopa Reservation near here, but a keypunching service set up last year is succeeding where other plans failed.

Gila River Data Processing Services does data preparation under contract to outside users. Current projects include handling overflow work for University Computing Corp., Dallas, and converting a million manual records for use with an automated credit system.

Twenty-four Indians have completed training in the operation of a CMC-5 key-to-disk data entry system installed last month at the company's office on the reservation. The firm also has 11 Indians working on conventional keypunch/keyverify equipment, and nearly a dozen trainees.

The company expects to have 72 employees by the end of June. This will be an optimum size for this type of operation, according to a spokesman.

The first group of 12 Indians trained on the CMC-5 had previous experience on keypunch equipment but the newer operators had no background in DP.

Training on the key-to-disk system was originally provided by the vendor of the CMC-5, Computer Machinery Corp. of Santa Monica, Calif.

The FM4 Gila River Corp., which operates the DP service operation, was organized last year and is now majority-owned by the Indian Council that governs the reservation.

As soon as the Indians gain sufficient experience, the company will be owned entirely by the Indians.

Graduates of two-week operator's school receive their diplomas from Ethel Garoia, administrative assistant of Gila River Data Processing Services, and Leta Gibson, Computer Machinery trainer, who taught the course.

Education

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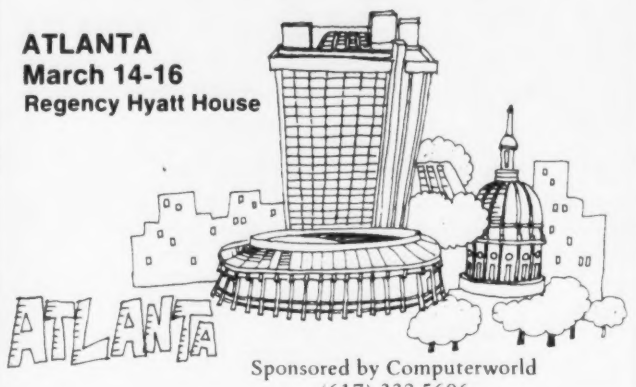

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computer industry

a Computerworld news section about the nation's fastest growing industry

February 23, 1972

CI Notes

Datran Changes Managers

VIENNA, Va. – Data Transmission Co. (Datran) has a new president and chief executive officer in the wake of layoffs that cut about 10% from the firm's workforce.

Glenn E. Penisten is the new officer, replacing Sy Joffe as president and Sam Wyly as chief executive. Joffe will continue as chief marketing officer and Wyly as chairman of the board. Penisten comes from Texas Instruments, where he was vice-president in charge of the new enterprise division.

The layoffs affect about 15 employees of the firm, cutting the staff from 135 to 120. They were necessary "to eliminate duplications of effort in some areas," according to company spokesmen.

Russians Show DP Interest

WASHINGTON, D.C. – George S. Pavlov, a top aide of Soviet Communist party chief Leonid I. Brezhnev, is in the U.S. studying American data processing techniques.

The unpublicized visit of the head of the Central Committee of the party's administrative section has taken him to Rand Corp., MIT and the U.S. Census Bureau in his search for information about the use of computers in the U.S.

Supershorts

Computer Sciences' fourth quarter earnings will include a writeoff of about $59 million in development costs for Infonet.

– – –

Thomas L. Ringer has been named president and chief executive officer of Computer Machinery Corp. Former President James K. Sweeney has become chairman of the board.

– – –

A $6.9 million contract for the development and installation of an automated technical control (Atec) system for the Defense Communications System (DCS) has been awarded to Honeywell by the U.S. Air Force Rome Air Development Center.

– – –

Control Data Corp. has placed a $3 million order with ICL for its Model 11 magnetic tape units. Deliveries of the units are to be spread over the next three years, the first delivery having already been made.

– – –

Quantor Corp. signed a master sales agreement with Transamerica Computer Corp. under which Transamerica committed $1.3 million over the next year, enabling Quantor to receive a significant portion of the sales price of its equipment as it is leased.

Transamerica is retroactively purchasing four Quantor COM systems already installed.

– – –

Redactron Corp., manufacturers of editing typewriters, and International Trading Corp. have agreed to set up Redactron International, a Geneva-based corporation. The new organization will act as master distributors of Redactron editing typewriters to Europe, Australia, South Africa and New Zealand.

Comma President Says

Independent Maintenance to Boom

By E. Drake Lundell Jr.
Of the CW Staff

NEW YORK – Maintenance of computer equipment is presently a $2 billion industry of which the independents account for around $200 million at present, according to Richard Puder, president of Comma Corp. here.

Overall, however, the independents will be competing for almost $1 billion in business by 1975, he added.

Today, Puder said, almost 95% of all maintenance is handled directly by the computer manufacturers, but that percentage will go down dramatically as more independent firms with national field engineering staffs develop.

The market is split into two segments, he said.

There are the independent maintenance firms who handle equipment from the independent peripheral makers on a product-by-product basis and there are the firms that maintain an entire system – mainframe and all peripherals – for a user.

Systems Maintenance

The real potential in the market, according to Puder, is for systems maintenance, but it is hard to develop a staff of people capable of handling an entire installation, he added.

Presently, trained people come either from the ranks of IBM field engineers, he said, or from the services where they have received training.

To overcome this gap, Comma has started its own in-house education program for people who want to enter the business, but "it takes about three years before a man is fully qualified," he said.

At the same time, there is a market for firms who want to offer training in computer maintenance, Puder said, indicating there was a potential for Comma to enter the training market, although it does not plan to do so in the near future.

While the market for firms to maintain equipment manufactured by smaller independent peripheral makers is presently large, according to most industry estimates, Puder said he expects this market to begin declining in a year or two.

Many users have indicated it is hard to deal with several maintenance men in the same shop and they prefer to deal with one directly.

As the use of independent peripherals increases and more and more firms either purchase or lease their computer mainframes, more users will turn to an independent source for all of their maintenance, he indicated.

But even without further movement toward leased and purchased systems there is still a huge potential market to be tapped by the independent maintenance firms, Puder said.

Presently, he said there is equipment valued at $2 billion on lease from third party leasing companies and $700 million to $800 million worth of purchased systems in the field – all potential users of independent maintenance services and largely untapped.

There is also a possibility IBM will unbundle its maintenance services and thus open the large base of equipment rented from IBM to the independent maintenance companies, Puder said, adding, however, "we're not betting on that."

20% Growth

During the next few years, the market will grow at around 20% annually, Puder said, and the main project for the independents in the field will be to staff up to offer the services necessary.

To date there has been little competition in the systems maintenance field, Puder said, even though there is a great deal of competition in the peripheral maintenance area.

In the future, competition will grow in systems maintenance, he said, but added it takes a long time for a firm to build up competence in the area and establish a national network capable of meeting user needs.

The international market for the independents has not really developed to date, but should become an important part of operations in a few years, he said.

Government Moves to Clear Up Crisis in Czech Computer Use

By Bohdan O. Szuprowicz
Special to Computerworld

PRAGUE – Czechoslovakia's current five-year plan calls for coordinated, rapid growth in the installation of computers as well as the development of a viable native industry in order to counter the effects of a haphazard DP growth.

Czechoslovakia now has 300 different computers including machines made in Poland, the Soviet Union, East Germany, Czechoslovakia, and imports from 22 Western firms representing 50 different computer models in all – all the result of attempts to computerize its economy too rapidly.

The segmentation of the market and the wide variety of installations have meant the distribution of computers is uneven in terms of applications and geographically. Spare parts are sometimes difficult to obtain, and service problems can take up to a week to resolve.

The 1971 to 1975 five-year plan calls for installation of at least 360 new computers, many more than in the previous five-year plan which missed its target. The Eastern European countries and Russia now consider computerization vital to optimize their planned economies, and stress the application of computers in management and planning. It is one of the measures which might narrow the gap between the Czechoslovak Socialist Republic and the West.

A government report prepared in 1969 criticized the Czechoslovak computer industry for frequently installing computers without sufficient preliminary preparation. Organizations were determined "to get one, whatever the cost," and in the process consistently failed to utilize the capacities due to shortage of properly trained personnel and systems analysis.

As early as 1966 the government recognized such shortcomings and took steps to remedy the situation. It made an agreement with the Soviet Union to import the Minsk-22 computers and with Poland for the Odra series of machines in an effort to reduce the variety of models and save foreign currency by purchasing equipment from other socialist countries.

The production of Czechoslovak computers was also pressed to fill the needs internally.

In 1968 the RJAD computer series concept was solidified and Czechoslovak and Soviet specialists signed a protocol and later resumed discussion on common computer manufacturing with other countries within the Intergovernmental Commission for Computer Techniques.

Principles were adopted to insure uniform technical policies for the development and production of computers, uniform programming methods and development of a uniform system permitting the linking of each other's computers. Participating members also agreed to divide responsibility for development and production of individual types of computers and peripherals. Czechoslovakia "was assigned" the task of developing and producing the R20 and R30 models which are third generation machines.

Among the Western firms Univac is leading IBM and ICL of the United Kingdom in number of installations, but the bulk of machines is now Russian, Czech and Polish.

Given the ambitious plans of the politicians for 1,200 computers to be installed by the end of 1980, Czechoslovakia will have to work hard to meet the order.

Cogar Resurrects System 4

WAPPINGERS FALLS, N.Y. – The Cogar 4 minicomputer system is not dead, despite rumors to the contrary ever since Cogar Corp. stopped marketing the unit in the U.S. last year because of a cash shortage.

The firm last week announced signing two marketing agreements "which will provide a firm basis for both domestic and international distribution of the Cogar System 4 minicomputer," according to the company.

The contracts have been signed with Keene Associates in Boston and Resyme AG in Switzerland. Keene will have marketing rights to the systems in New England and other selected areas in the U.S. and Resyme will have the rights in Germany, Switzerland and Austria.

Cogar also announced it was presently negotiating with other organizations "which could significantly expand the existing marketing base for the System 4."

In addition, the firm has brought its European marketing director, Richard Kontrimas, to the U.S. to head up worldwide marketing of the unit.

The System 4 has been marketed successfully, the firm claims, in Europe even though U.S. distribution was stopped. Cogar said that shipments of System 4s have already begun to Keane and Resyme from a backlog built up while the unit was not actively being marketed in the U.S.

Cogar claims over 100 System 4 installations worldwide.

EAI Digital Computer Intended for Hybrid Systems

WEST LONG BRANCH, N.J. – A digital computer from Electronic Associates, Inc. (EAI), intended for applications in dedicated and hybrid systems, can be used to solve engineering and control problems and to simulate systems dynamics, the firm said.

The Pacer uses LSI and MSI technology. Memory cycle time is 1 μsec, providing Add times of 2 μsec. Standard hardware multiply/divide instructions are performed at 5.6 μsec and 6.6 μsec, the company said.

Other hardware features include an 8K 16-bit word memory, expandable to 16K or 32K; real-time monitor; foreground/background operation; relative, direct and multilevel indirect addressing; power fail detection/automatic restart; 72 levels of interrupt; ROM bootstrap, optional DMAs; and optional hardware floating point.

More than 150 applications software packages are available for use with the Pacer, including monitors, operating systems, numerical integration, assembler, Hybrid Operations Interpreter, Fortran IV, digital operating interpreter, symbolic debug and text editor, statistical package and a mathematical library.

Peripherals include teletypewriters, graphic displays, card readers, mag tapes and disks, plotters and D/A and A/D converters.

Prices start at $28,000 with a basic hybrid linkage. Automation systems start at $44,500 and graphics systems at $22,000.

New OEM Products

Bipolar RAM Introduced

SUDBURY, Mass. – The first semiconductor memory from Memory Technology, Inc., a bipolar RAM, offers a choice of speeds, range of capacities and an optional test mode panel. It is suited for microprogramming applications, the company said.

The Model 3333 has a cycle time of 200 nsec and access times that range from 90 to 130 nsec.

System size can vary from 1K to 4K words, in 1K increments and word length from 9 bits to 54 bits, in 9-bit increments.

The 3333 has a self-contained power supply and cooling and uses multilayer memory boards. Power requirement is 115 V, 6 A, 47 to 63 Hz. High-speed Schottky-clamped TTL circuits are used in all critical delay paths.

Delivery is 85 days from 83 Boston Post Road, 01776.

Other New Products

A 2.3-lb data terminal power supply that uses a high frequency AC/DC power converter and provides three regulated outputs is available from Arnold Magnetics Corp., Culver City, Calif.

– – –

A family of 36-in. drum, digital incremental plotters has been added by Zeta Research, Inc., Lafayette, Calif. Speeds in the series range from 900 increment/sec to 1,800 increment/sec; prices start at $12,000.

– – –

A Universal punched tape reader from Decitek, Worcester, Mass., reads 300 char./sec asynchronously, and up to 600 char./sec.

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– – –

Pitney Bowes, Stamford, Conn., recently announced it will make its Data Encoding System available to all retail organizations and to other interested manufacturers of point-of-sale equipment on a royalty-free basis.

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Independent Disks Provide CDC Commercial Users

By E. Drake Lundell Jr.
Of the CW Staff

MINNEAPOLIS – Control Data's Data Systems Marketing organization, founded just over two years ago, does double duty for the firm.

Not only does it provide immediate revenues from sales in the "independent peripherals" marketplace, but it also provides the firm with an entry into commercial DP centers – areas it would like to penetrate later with its mainframes.

Selling plug-compatible disk systems allows Control Data to "expand our customer base" and to enter new markets, according to Bill Heath who heads up the operation.

Hopefully, he said, many of the installations reached by the peripherals operation will later upgrade to CDC mainframes, if they like the firm's peripheral equipment, support and service.

The operation, he says, gives CDC an entry to commercial users who might not have otherwise considered using Control Data equipment and it allows the firm to build up rapport with those users.

Interest in Mainframes

So far, there has been some interest shown by customers of the division in CDC mainframes, Heath says, "but it takes time" before there are any dramatic results.

"As we show the quality and reliability of the products in the peripheral area, then more customers will turn to us for their complete systems."

The organization, founded in January 1970, originally was a special interest group marketing to end users selling stand-alone OCR systems, terminals to the IBM 360 customer base and plug-compatible disk systems.

Presently it is divided approximately 60% to 40% between plug-compatible disk systems and OCR equipment, with the marketing of terminals returned to the normal CDC computer sales force, Heath says.

The group now offers only plug-compatible disks but several industry sources expect the firm to enter other plug-compatible areas in the future, although no one at the company will comment on future plans in the area.

To date the marketing of plug-compatible disk systems has been "extremely successful," according to Heath, especially in the area of double density units.

Most users, he said, have found the use of double density drives helps them solve their upgrading problems – they can put off upgrading for a while by using the drives.

Financially Successful

At the same time the independent marketing arm has been successful financially – with almost 800 drives in the field – and it has also proved to be a psychological weapon for CDC salesmen, he says.

The move has proved to the commercial customer that CDC can meet the needs of the commercially oriented user and that it can support that customer to the extent necessary, he says.

At the same time, the division has also been a good training ground for salesmen who will be used as CDC tries to penetrate the commercial mainframe market, he indicates.

A large number of the CDC salesmen in the past had been oriented to the large scientific and engineering market, or to the government market. But now with two years' experience on commercial accounts, there is a growing body of sales and support people who understand the commercial market and the needs of commercial users, he says.

While CDC has had to overcome its image as solely a mainframe firm to penetrate the market, the existence of a national service and support staff has helped it in some areas, Heath said.

While the success has been most noticeable in the area of plug-compatible devices that attach directly with IBM mainframes, Heath also indicates that the stand-alone OCR area allowed CDC to penetrate other IBM installations.

In this area, Heath indicated there is a need for lower cost systems that are compatible with the present systems.

The least expensive OCR offered by CDC at the present, he said, rents for less than $2,000 per month, but he predicts in the future there would be units that rent for as low as $500 per month.

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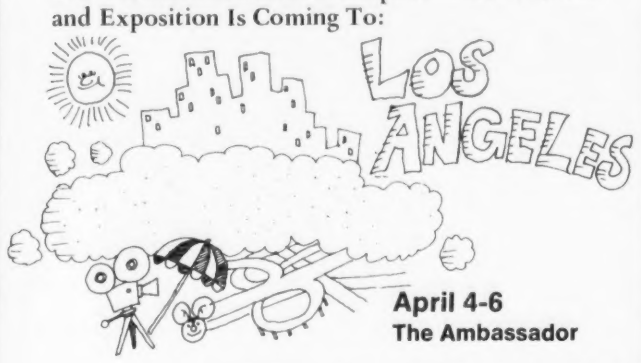

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China Traders Must Learn New Ways; Can Get Tips From Canadian Business

By Kam Nolan
Special to Computerworld

The People's Republic of China, now purchasing large quantities of electronic and scientific equipment from Western countries, could become a substantial new computer market for the U.S.

Canadian government officials experienced in Chinese trade stress, however, that such trade is likely to become a reality only to those firms willing to learn new ways of doing business.

"Trading with the Chinese requires great persistence, time and effort, as well as some specialized knowledge," says one official. "There is no such thing as real price negotiation. The Chinese have never been known to deal on any terms other than their own.

"On the plus side, though, China is a large potential market. The Chinese are rigorously fair in their dealings: they pay in full and on time, and adhere to all other contractual details. Businessmen who pay the price of developing new business habits will probably find the trouble well worth their while," the official says.

Product Information

Businessmen interested in trading with the Chinese should send a minimum of 10 sets of comprehensive product information to the state monopoly, the China National Machinery Import and Export Corporation (Erh Li Kou, Hsi Chiao, Peking, People's Republic of China).

Although it is not advisable to send price information until interest has been expressed by the Chinese, as much other information as possible about both the product and the firm ought to be included. Follow-up material (in as many sets as the original) should be sent periodically, along with a letter mentioning the initial submission. The Chinese will eventually reply if they are interested.

Always refer to the nation by its official name: People's Republic of China. Letters containing or addressed to unofficial names such as Mainland China or Continental China will be either discarded or returned to the sender.

The Canton Trade Fairs, held annually in the spring and in the autumn, are important in Chinese trade. Officials representing the entire spectrum of Chinese industry and geography travel to the fairs to meet businessmen.

Major contracts are often negotiated and concluded during these events. In addition, it is most difficult for the businessman to visit trading corporation personnel in other parts of China without having first met representatives at one of the fairs.

Invitations to the fair are required. Requests for fair invitations should be addressed to the Machinery Corporation, following submission of preliminary product material. Invitations may also be requested from the Chinese Export Commodities Fair (Pearl River Square, Kwangchow, People's Republic of China).

Tips From Canadians

The Canadians say to be prepared for long discussions. Morning meetings are much preferred by the Chinese. Bring along copies of all correspondence. Keep any of your less-than-enthusiastic observations to yourself. Refrain from any sort of political comment, either in public or in private. Never tip anyone, but do remember to say "thank you" to the people who have served you.

Businessmen considering China as a potential market should write to the U.S. Department of Commerce for Overseas Business Report 71-024, "Trading with the People's Republic of China."

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IBM Overcomes Dust Problem in Printer

ENDICOTT, N.Y. – The IBM 3211, the company's fastest computer printer, solves the problem of dust with a built-in vacuum cleaning system.

During the development of the 3211, engineers at IBM's laboratory here found that dust and lint collected in the print mechanism. Because of close tolerances of the cartridge and hammer unit, the dirt particles affected printing.

To clean the development model, engineers had to stop the printer, remove the cartridge, and manually dislodge the dust from the type elements and immediate hammer-unit area.

This inconvenience prompted designers to investigate the possibility of having the printer clean itself

The principle is simple. Jets of air are directed at the type where it makes a turn, dislodging the paper dust, lint and other foreign matter; located right after the air jets is a cavity where all the dislodged particles are vacuumed away into a disposable bag.

System 7 Manufacturing Called Unique

BOCA RATON, Fla. – The IBM General Systems Division here has developed what it says is a "unique" way to produce its System 7.

Under this production technique:

- A manufacturing control computer is used to help the selection of the parts list for each new System 7.
- Parts are stocked at the head of the production line.
- Specially designed multipurpose carts, equipped with rotary tables, are used to roll the parts to technicians.

The System 7 was built with a new, "modular architecture" to adapt to a diversity of jobs and its modularity leads to the high number of combinations of parts – over 60,000 different combinations, according to IBM.

The manufacturing technique "gives us maximum ability to mass produce custom modules. Because of the large number of parts combinations, conveyor belts didn't lend themselves to customized production," according to Bernard Sassen, an IBM manufacturing engineer.

The solution he devised involves a "pre-kit" process centered on the specially designed carts in which module parts are gathered, assembled, tested and delivered to the final production area.

With the technique a part collector, using the computer-generated list of components needed to build a specific S/7 module, stocks a cart with all the mechanical and electrical materials from the central supply area.

Customized parts lists generally contain over 200 different parts in varying quantities, ranging from jumper wires to welded sheet metal frames.

Once the parts are collected, the cart is wheeled to a work station where it is clamped into place and becomes a work table. An assembly technician takes over and assembles the complete module, using mechanical parts, cables, and circuit cards.

After assembly, the completed module is wheeled on the cart to a test station, checked, then on to a final assembly area. Here the module is placed in the S/7's mainframe, along with other modules, each designed to monitor and control specific processes for a customer.

When all modules are installed, the S/7 is ready for final test before panel covers are installed.

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Orders & Installations

International Commercial College, Kaohsiung, Taiwan, and Beatson Clark & Co., Ltd., Rotherham, England, have installed NCR Century 100s. Eastern Counties Building Society, Ipswich, England, has ordered a Century 100 to handle investment and mortgage-account processing. Victorias Milling Co. has installed an NCR Century 200 in Negros Occidental, The Philippines.

A large West German travel firm, Gemeinwirstschaftliche Unternehmen fur Touristi (GUT), has ordered a $2.2 million Univac 1106 to process bookings. Washington State Community College District 17 has ordered a Univac 9400 to serve community colleges in northeastern Washington.

The Florida Highway Safety and Motor Vehicles Department has ordered a $4.4 million Burroughs B6700 system, terminals and communications devices. The system will be used to keep records on vehicle registration, driver licenses, traffic tickets and driver arrest records.

Time Sharing Systems Inc., a Wisconsin-based firm, is adding a second Burroughs B5500. The city of Huntington Beach, Calif., has ordered a B2500 to handle payroll, general accounting, water billing, appropriations and budgeting, and business licenses.

Digital Data Systems Corp. has installed its on-line Creditmaster system in Macy's, Kansas City, Mo.; Popular Dry Goods Co., El Paso, Texas; Miller & Rhoads, Richmond, Va.; and B. Gertz, Inc., Jamaica, N.Y.

General Adjustment Bureau, Inc. has ordered a Scan-Data Model 250 OCR Page and Document Reading System for use in billing, adjustment and payment form processing.

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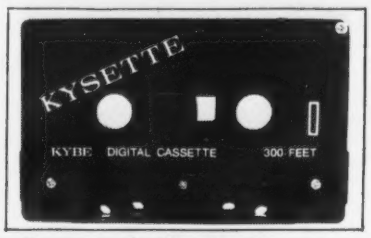

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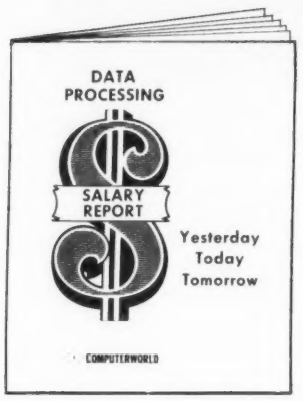
DATA PROCESSING SALARY REPORT



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Informatics, Computing & Software Reports Show Earnings Upswing

CANOGA PARK, Calif. – Two software houses – Informatics Inc. and Computing and Software Inc. – have registered earnings and revenue gains in spite of the recession facing a large part of the industry.

The third quarter ended Dec. 25 marked the first period when Informatics was unencumbered by losses from its former Los Angeles data centers. The firm chalked up one of the best profit performances in the company's history, according to President Walter F. Bauer.

In the three months, earnings reached $217,000 on revenues of $3.5 million. For the nine months, earnings totaled $296,000 or 19 cents per share, compared with $232,000 or 15 cents per share in the year-ago period. Revenues for the period were $12.7 million, up from $12 million.

Earnings during the first six months had been cut in half by unprofitable operations, the firm said.

All units of the firm were showing profitable operations, in the period, according to Bauer.

And Computing and Software compiled another record-breaking year, its sixth straight. In 1971, earnings reached $6.4 million, or $1.14 per share compared with $6.3 million or $1.13 per share in 1970. Revenues climbed to $95.4 million from $90.1 million.

The firm disposed of its commercial education and personnel services, incurring an extraordinary charge of $285,000.

Telex Nine-Month Earnings Slip

TULSA, Okla. – Reports from Telex for nine months ended Dec. 31 continue the trend shown in the six-month report: difficulty translating higher revenues into increased income.

Revenues totaled $60.9 million, up from $57.2 million for the same period last year, but earnings were cut almost in half, to $2.9 million or 28 cents per share compared with $5.1 million or 48 cents per share in the same year-ago period.

Dollar value of peripheral equipment delivered to end users during the period slipped to $52 million from $56 million during the year-ago period. About $30 million or 58% of the current equipment volume was sold to independent leasing companies, a reduction from the $34.5 million or 62% for the same period last year, Telex said.

Rental income totaled $7.1 million compared with $1 million in the same period a year ago, and is accounted for under the "operating method" of accounting.

The decline in physical volume shipped is a result of the phase down of certain products such as the Model 5314 disk drives and the Model 5400 tape drives, Telex said.

As of Dec. 31, Telex had firm orders for sale or lease of equipment having a sales value of $55.4 million compared with $36.2 million at the same date a year earlier.

Nickels & Dimes

Com-Share Inc. is celebrating its first profitable quarter in the time-sharing company's history. In the period ended Dec. 31, earnings were $69,227 or 7 cents a share compared with the year-ago quarter's loss of $213,587 or 26 cents a share.

Operating revenues, exclusive of a $154,000 nonrecurring item, totaled $1.7 million, up 14% over the first quarter of this year, and up from $1.3 million in the same 1970 quarter.

$$$

Modem maker **Milgo Electronic** showed a turnaround in the first quarter ended Dec. 31 from the year-ago period. Earnings reached $370,000 or 23 cents per share compared with a loss of $84,000 or 5 cents per share. Revenues totaled $2.4 million compared with $2 million in the 1971 quarter.

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TRADE*QUOTES

Computerworld Stock Trading Summary

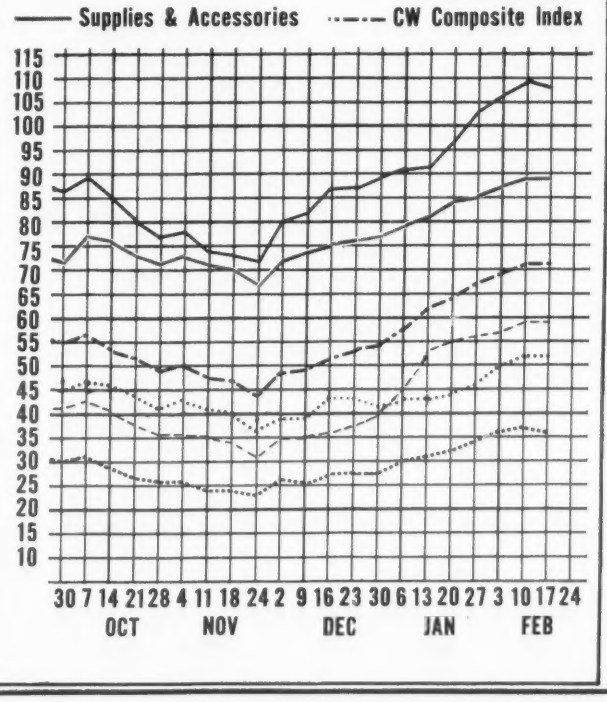
All statistics compiled, computed and formatted by TRADE★QUOTES, INC. Cambridge, Mass. 02139

CLOSING PRICES THURSDAY, FEBRUARY 17, 1972

EXCH		71-72 RANGE (1)	CLOSE FEB 17 1972	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 4	1 1/4	+ 1/8	+11.1
A	APPLIED DATA RES.	5- 13	7 1/8	+ 1/8	+1.7
O	APPLIED LOGIC	1- 3	2 1/4	0	0.0
N	AUTOMATIC DATA PROC	44- 86	84	-1 3/4	-2.0
O	AUTO SCIENCES	1- 8	5/8	0	0.0
O	COMPUTER DIMENSIONS	9- 17	12	+1	+9.0
O	COMPUTER NETWORK	2- 11	5	-1	-16.6
N	COMPUTER SCIENCES	6- 17	8	-1 1/4	-13.5
O	COMPUTER TECHNOLOGY	4- 11	6 1/4	+ 1/2	+8.6
O	COMPUTER USAGE	5- 16	9 7/8	- 1/4	-2.4
O	COMP AUTOMOT REPORTS	6- 13	7 3/4	- 1/4	-3.1
N	COMPUTING & SOFTWARE	17- 45	24 3/8	0	0.0
O	COMRESS	1- 4	2 3/8	+ 1/8	+5.5
O	COMSHARE	4- 9	8	- 5/8	-7.2
O	DATA AUTOMATION	1- 4	1/2	- 1/8	-20.0
O	DATA PACKAGING	6- 10	8	- 5/8	-7.2
O	DATAMATION SERVICE	1- 3	1 1/8	+ 1/4	+28.5
L	DATATAB	3- 8	7 3/4	+3	+63.1
O	EDP RESOURCES	5- 16	5 3/4	- 3/4	-11.5
A	ELECT COMP PROG	2- 7	3	0	0.0
N	ELECTRONIC DATA SYS.	34- 85	56 1/4	+8	+16.5
O	INFORMATICS	6- 15	10 1/8	+ 1/8	+1.2
O	I.O.A. DATA CORP	1- 3	1	0	0.0
A	ITEL	7- 23	10 5/8	+ 1/8	+1.1
O	KEANE ASSOCIATES	4- 14	5	-1 1/2	-23.0
O	KEYDATA CORP	5- 14	9 1/4	+ 1/8	+1.3
O	LOGICON	5- 8	8 3/8	+ 5/8	+8.0
A	MANAGEMENT DATA	5- 11	8 3/8	- 1/4	-2.8
O	NATIONAL CSS INC	7- 14	11 3/4	- 1/4	-2.0
O	NAT COMP ANALYSTS	1- 4	7/8	- 1/8	-12.5
P	ON LINE SYSTEMS INC	7- 18	12 7/8	+1	+8.4
N	PLANNING RESEARCH	10- 26	16 1/4	- 5/8	-3.7
O	PROGRAMMING METHODS	16- 29	23 1/8	+ 1/8	+0.5
O	PROGRAMMING & SYS	1- 4	1 3/4	+ 1/8	+7.6
O	SCIENTIFIC COMPUTERS	2- 4	3 3/8	0	0.0
O	SIMPLICITY COMPUTER	1- 4	2 7/8	- 1/4	-8.0
O	SOFTWARE SYSTEMS	1- 3	1 3/8	0	0.0
O	TBS COMPUTER CENTERS	4- 9	5	+ 3/4	+17.6
O	TOLLEY INTL CORP	3- 8	8 3/4	+1 1/2	+20.6
O	TRACOR COMPUTING	2- 5	2	- 1/8	-5.8
O	TYMSHARE INC	4- 15	8 1/2	+ 1/8	+1.4
O	UNITED DATA CENTER	2- 8	7 1/4	-1	-12.1
N	UNIVERSITY COMPUTING	14- 38	19 7/8	- 5/8	-3.0
A	URS SYSTEMS	5- 11	7 1/2	+ 5/8	+9.0
O	VORTEX CORP	2- 6	5	0	0.0
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	24- 48	38 1/8	-2 1/2	-6.1
O	ALPHANUMERIC	1- 6	1 1/4	0	0.0
N	AMPEX CORP	8- 25	8 5/8	- 3/8	-4.1
O	ANDERSON JACOBSON	5- 10	5 7/8	- 1/2	-7.8
O	ATLANTIC TECHNOLOGY	3- 9	8 3/4	- 1/4	-2.7
A	BOLT,BERANEK & NEW	4- 9	8 1/4	- 1/8	-1.4
N	BUNKER-RAMO	6- 17	9 5/8	- 1/4	-2.5
A	CALCOMP	14- 33	23 1/4	- 7/8	-3.6
O	COGNITRONICS	2- 9	4 1/4	+ 1/4	+6.2
O	COLORADO INSTRUMENTS	2- 8	2	- 1/8	-5.8
O	COMPUTER COMMUN.	5- 19	6	0	0.0
A	COMPUTER EQUIPMENT	3- 7	4 1/8	+ 1/2	+13.7
A	COMPUTEST	4- 20	7 3/4	+ 1/4	+3.3
O	CONSOL COMPUTER LTD.	1- 12	1/2	- 1/8	-20.0
A	DATA PRODUCTS CORP	3- 10	6 1/4	- 1/4	-3.8
O	DATA RECOGNITION	3- 8	4 1/2	+ 1/2	+12.5
O	DATA TECHNOLOGY	3- 9	4 1/4	- 5/8	-12.8
O	DI/AN CONTROLS	3- 7	4 1/8	+ 3/8	+10.0
O	DIGITRONICS	2- 8	3	0	0.0
N	ELECTRONIC M & M	5- 16	6 1/4	-1 1/8	-15.2
O	FABRI-TEK	2- 4	4	+1	+33.3
O	GENERAL COMPUTER SYS	6- 16	15 1/2	+1	+6.8
N	GENERAL ELECTRIC	53-124	60 1/2	- 1/4	-0.4
N	HAZELTINE CORP	6- 12	10 1/2	- 3/8	-3.4
O	INFOREX INC	17- 49	39 1/2	-2	-4.8
O	INFORMATION DISPLAYS	3- 8	3	- 7/8	-22.5
O	MANAGEMENT ASSIST	1- 2	7/8	0	0.0
A	MARSHALL INDUSTRIES	7- 27	10 1/2	- 3/4	-6.6
N	MEMOREX	20- 78	33 1/8	- 3/4	-2.2
A	MILGO ELECTRONICS	12- 28	27	0	0.0
N	MOHAWK DATA SCI	15- 47	20 1/8	+ 5/8	+3.2
O	OPTICAL SCANNING	6- 18	15 1/2	+4 3/4	+44.1
O	PERTEC CORP	9- 18	15 3/8	- 7/8	-5.3
O	PHOTON	6- 15	13 3/4	+1	+7.8
A	POTTER INSTRUMENT	11- 25	18	- 5/8	-3.3
O	PRECISION INST.	7- 16	9 3/4	-1 3/4	-15.2
O	RECOGNITION EQUIP	9- 26	13 1/2	+ 3/8	+2.8
O	REDCOR CORP.	1- 9	1/4	- 1/8	-33.3
N	SANDERS ASSOCIATES	9- 22	17 1/8	-2 1/4	-11.6
O	SCAN DATA	6- 15	12 1/2	+1 1/4	+11.1
O	SYCOR INC	3- 11	9	+1 1/2	+20.0
O	TALLY CORP.	6- 16	10 1/4	-1	-8.8
N	TEKTRONIX INC	28- 44	36 1/4	- 1/8	-0.3
N	TELEX	8- 22	12	- 1/2	-4.0
	SUPPLIES & ACCESSORIES				
N	ADAMS-MILLIS CORP	9- 19	12 1/2	+ 1/2	+4.1
O	BALTIMORE BUS FORMS	6- 10	7 3/4	+ 1/4	+3.3
A	BARRY WRIGHT	7- 13	11 7/8	- 3/8	-3.0
A	DATA DOCUMENTS	14- 29	23 1/4	+ 7/8	+3.9
O	DUPLEX PRODUCTS INC	8- 14	13 3/8	- 1/4	-1.8
N	ENNIS BUS. FORMS	5- 13	8 1/4	- 1/4	-2.9
O	GRAHAM MAGNETICS	9- 35	21 7/8	- 7/8	-3.8
O	GRAPHIC CONTROLS	6- 15	11 3/4	- 7/8	-6.9
N	3M COMPANY	96-139	138 3/8	0	0.0
O	MOORE BUS. FORMS	36- 48	47 3/4	+ 3/4	+1.5
N	NASHUA CORP	29- 54	53 3/8	- 5/8	-1.1
O	REYNOLDS & REYNOLD	37- 77	76 1/2	+3	+4.0
O	STANDARD REGISTER	14- 23	19 1/8	+ 1/2	+2.6
O	TAB PRODUCTS CO	8- 17	15 3/4	- 1/4	-1.5
N	UARCO	23- 34	27 3/8	+ 1/8	+0.4
A	WABASH MAGNETICS	5- 10	8 7/8	- 1/8	-1.3
N	WALLACE BUS FORMS	18- 26	24 1/2	0	0.0
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	105-167	165 5/8	+8 1/2	+5.4
N	COLLINS RADIO	10- 20	16 5/8	-1	-5.6
N	CONTROL DATA CORP	34- 83	56	0	0.0
O	DATA GENERAL CORP	19- 71	70	+2 1/2	+3.7
O	DIGITAL COMP CONTROL	4- 24	23	0	0.0
N	DIGITAL EQUIPMENT	53- 92	89 5/8	+ 7/8	+0.9
N	ELECTRONIC ASSOC.	5- 9	7 3/4	+ 1/8	+1.6
A	ELECTRONIC ENGINEER.	5- 14	13 3/8	+ 5/8	+4.9
N	FOXBORO	25- 46	35 3/4	- 1/8	-0.3
O	GENERAL AUTOMATION	9- 26	23	-1 1/2	-6.1
N	HEWLETT-PACKARD CO	30- 53	50	-2 1/2	-4.7
N	HONEYWELL INC	83-155	151 3/8	-3 5/8	-2.3
N	IBM	284-374	367 3/4	-4 1/4	-1.1
O	INTERDATA INC	6- 11	10 5/8	- 1/8	-1.1
N	NCR	25- 49	31	-2 1/4	-6.7
N	RAYTHEON CO	27- 46	45 3/8	+ 5/8	+1.3
N	SPERRY RAND	23- 38	37 3/8	+ 3/4	+2.0
A	SYSTEMS ENG. LABS	7- 18	12	-1 1/8	-8.5
N	VARIAN ASSOCIATES	11- 18	15 3/4	-1 1/8	-6.6
N	VICTOR COMPTOMETER	12- 27	16 1/2	+ 3/8	+2.3
N	WANG LABS.	29- 50	37 1/2	-2 1/2	-6.2
N	XEROX CORP	85-135	133 3/4	0	0.0
	LEASING COMPANIES				
A	BOOTHE COMPUTER	11- 27	14 1/2	-1	-6.4
O	BRESNAHAN COMP.	2- 4	2 5/8	- 1/4	-8.6
O	COMPUTER EXCHANGE	1- 9	1 3/4	0	0.0
A	COMPUTER INVSTRS GRP	7- 14	10 3/8	+ 3/4	+7.7
N	DPF INC	8- 19	11 1/8	- 3/8	-3.2
O	DATRONIC RENTAL	2- 4	3 1/2	- 3/8	-9.6
A	DCL INC	5- 13	9 1/2	- 1/2	-5.0
A	DEARBORN-STORM	12- 23	20 1/2	-1 3/8	-6.2
A	DPA, INC.	4- 9	5 1/2	+ 1/4	+4.7
A	GRANITE MGT	7- 13	9 1/4	+ 1/4	+2.7
A	GREYHOUND COMPUTER	7- 11	9 3/4	- 1/4	-2.5
N	LEASCO CORP	16- 26	21 3/8	- 3/4	-3.3
O	LECTRO MGT INC	2- 5	3	+ 5/8	+26.3
O	NCC INDUSTRIES	3- 10	9 3/8	+ 1/8	+1.3
A	ROCKWOOD COMPUTER	3- 9	6 1/8	+ 1/8	+2.0
O	SYSTEMS CAPITAL	3- 7	6 1/4	- 1/8	-1.9
N	U.S. LEASING	16- 44	43 1/4	- 1/4	-0.5

EXCH: N=NEW YORK EXCHANGE; A=AMERICAN EXCHANGE
L=NATIONAL EXCHANGE; O=OVER-THE-COUNTER
P=PHIL-BALT-WASH
O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

Computer Stocks Trading Index



Earnings Reports

DATA PRODUCTS
Nine Months Ended Dec. 25

	1971	1970
Shr Ernd	a$.03	.....
Revenue	38,517,000	$31,505,000
Spec Cred	b285,000	.....
Earnings (Loss)	c488,000	(8,898,000)

a-Based on income before special credit. b-From tax loss carryforward and gain on sale of securities. c-Equal to 7 cents a share.

MILGO ELECTRONIC
Three Months Ended Dec. 31

	1971	1970
Shr Ernd	$.23	.....
Revenue	2,384,000	$1,978,000
Earnings (Loss)	370,000	(84,000)

DATATRON PROCESSING
Year Ended Oct. 31

	1971	1970
Shr Ernd	a$.03	$.10
Revenue	6,301,949	7,084,545
Spec Chg	b21,232	.....
Earnings	c140,615	509,258

a-Based on income before special charge. b-From sale and abandonment of a plant site. c-Equal to three cents a share.

SYSTEMS ENGINEERING LABS
Six Months Ended Dec. 24

	1971	1970
Shr Ernd	a$.15	$.02
Revenue	7,082,080	8,044,120
Tax Cred	b201,832	.....
Earnings	c581,212	38,732

a-Based on income before tax credit. b-From recovery of federal income taxes. c-Equal to 23 cents a share.

VARIAN
Three Months Ended Dec. 31

	1971	1970
aShr Ernd	$.03	$.01
Revenue	46,412,000	46,021,000
Spec Item	b258,000	d1,700,000
Earnings (Loss)	c502,000	(1,628,000)

a-Based on income before special item. b-Credit; consists of $1,008,000 gain on sale of land and $750,000 charge from consolidation and relocation of facilities. c-Equal to 7 cents a share. d-Debit; from relocation and consolidation of certain facilities.

DATACRAFT
Six Months Ended Dec. 10

	1971	1970
Shr Ernd	a$.06	.....
Revenue	3,316,628	$2,139,821
Tax Cred	b56,494	.....
Earnings (Loss)	c131,237	(337,838)

a-Based on income before tax credit. b-From tax loss carryforward. c-Equal to 10 cents a share.

DIGITAL EQUIPMENT
Three Months Ended Jan. 1

	1972	1971
Shr Ernd	a$.35	$.25
Revenue	44,936,000	34,507,000
Earnings	3,648,000	2,456,000
6 Mo Shr	a.64	.55
Revenue	83,348,000	68,517,000
Earnings	6,588,000	5,406,000

a-Includes a nonrecurring gain equal to about 3 cents a share from foreign currency translation.

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